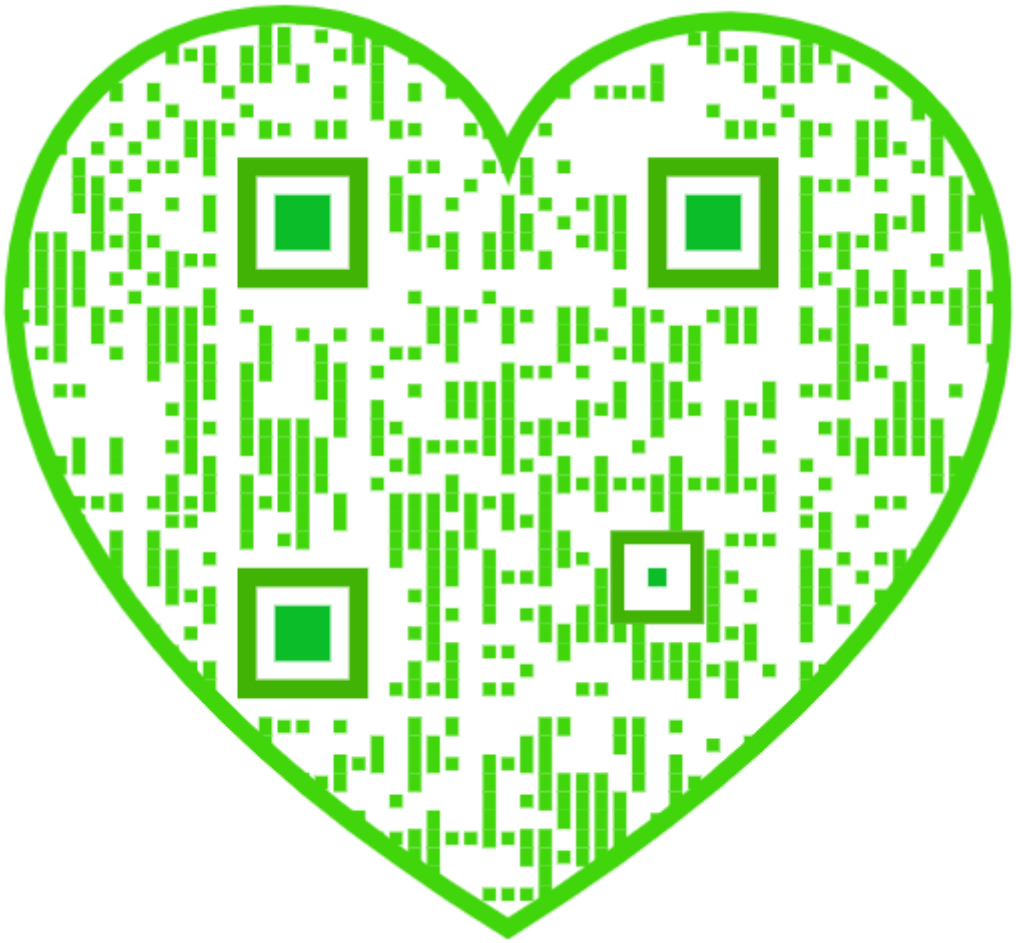

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# GENERAL PARESIS

CHASE

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## PRACTICAL AND CLINICAL

BY

ROBERT HOWLAND CHASE, A.M., M.D.

PHYSICIAN-IN-CHIEF, FRIENDS ASYLUM FOR THE INSANE; LATE RESIDENT PHYSICIAN, STATE HOSPITAL, NORRISTOWN, PA.; MEMBER OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION; FELLOW OF THE COLLEGE OF PHYSICIANS, PHILADELPHIA.

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"Of the uncertainties of our present state, the most dreadful and alarming is the uncertain continuance of reason."—Dr. Johnson's Rasselas.

# PREFACE.

In an experience of more than twenty-five years among cases of nervous and mental diseases the author has had frequent occasion to remark the lack of knowledge, among general practitioners, of the details of paresis.

It should be remembered that on this branch of the profession devolves the care of these cases at the onset, and on these members, as the family physician, must rest the responsible decision of diagnosis and early treatment, which, in so many ways, may mean much or little. In searching for the cause of this limitation of knowledge in this prevalent disease, he was doubly impressed with the meagreness of the available material on the subject. To be sure, the current literature is voluminous, but it is scattered, and not in a form to meet the needs of the busy physician. Hence, the writer has set about to compile a study of general paresis addressed to the practitioner and the student in medicine with the view of laying before them, as clearly as he may, the special features of this wonderful disease, which claims its victims from every walk and station of life.

There has been no pretence on his part to settle scientific questions that are still in dispute by investigators; neither has there been an attempt to advance original views and individual opinions beyond giving the practical results of his own experience and research. In gleaning from the field of medical writings, purporting thereto, he is indebted to a number of friends, whose assistance is herewith acknowledged. The illustrations, for the most part, have been taken from the very ample clinical material at

the State Hospital, Norristown, Pa., and the Insane Department of the Philadelphia Hospital, together comprising an insane population of nearly four thousand patients. To his friends, the chief medical officers of these institutions, Dr. D. D. Richardson and Dr. D. E. Hughes, he gladly takes this opportunity of expressing his obligations for the many courtesies received at their hands. In making abstracts from the various authorities, he trusts that a too liberal version of their writings has not, here and there, crept in—a fault into which one may inadvertently fall; and in quoting from them that due credit has been given.

If, then, in the profession at large, the writer be so fortunate as to awaken a further interest in a disease so widespread and significant as general paresis, he will feel that the important object of his work has been attained.

R. H. C.

PHILADELPHIA, July, 1902.

# CONTENTS.


CHAPTER I.

Introductory, . . . . . 17

CHAPTER II.

Synonyms. Definition. Mode of Commencement. Stages, . . . . . 22

CHAPTER III.

Prodromal Stage, . . . . . 27

CHAPTER IV.

First Stage of the Established Disease, . . . 41

CHAPTER V.

Second Stage of the Established Disease, . . 55

CHAPTER VI.

Third Stage of the Established Disease, . . . 64

CHAPTER VII.

Varieties of General Paresis. Galloping, Circular, Melancholic, and Spinal Forms, . . . 73

CHAPTER VIII.

Varieties (*continued*). Simple Progressive Dementia, Juvenile Form, Paresis in Woman, and Senile Form, . . . . . 94

CHAPTER IX.

Particular Symptomatology. Moral Perversion. Sexual Instinct. Hallucinations, . . . 110

CHAPTER X.

Particular Symptomatology (*continued*). Facial Expression. Speech. Handwriting. Gait. Tremor. Reflexes, . . . . . 116

CHAPTER XI.

Particular Symptomatology (*continued*). Cerebral Seizures. Eye Symptoms, . . . . . 127

CHAPTER XII.

Particular Symptomatology (*continued*). Sleep. Pain. Headache. Sensory Disturbances. Trophic Changes. Bones. Hematoma Auris, . . 145

CHAPTER XIII.

Particular Symptomatology (*continued*). Blood. Temperature. Pulse. Bladder. Urine, . . 164

CHAPTER XIV.

Differential Diagnosis, . . . . . 172

CHAPTER XV.

Etiology, . . . . . 187

CHAPTER XVI.

General Paresis following Ordinary Insanity. Remissions. Duration. Prognosis. Termination. 224

CHAPTER XVII.

Pathology and Pathological Anatomy, . . . 246

CHAPTER XVIII.

Treatment, . . . . . 267

Index, . . . . . 283

# LIST OF ILLUSTRATIONS.


PLATE. FACING PAGE.

Frontispiece. A Typical Face of General Paresis

I. Types of the Prodromal Stage . . . . . 28

II. Types of the First Stage of the Established Disease . . . . . 42

III. Types of the Second Stage of the Established Disease . . . . . 56

IV. Types of the Third Stage of the Established Disease . . . . . 64

V. Types of the Spinal Forms of General Paresis . 88

VI. Type of the Juvenile Form of the Disease . . 98

VII. Types of General Paresis in Woman . . . 106

VIII. Specimens of the Handwriting in General Paresis 119

IX. Normal Gait Compared with the Paretic Gait (modification of Mills after Marie) . . . 121

VIII a. Right Iridoplegia (Dilatation of Pupil) in Paresis (Mills) . . . . . 138

IX b. Spontaneous Fractures and Arthropathic Disintegrations (Charcot per Church-Peterson) . . 158

X. Types of General Paresis in the Negro . . 210

XI. General Paresis Supervening upon Epilepsy in Woman . . . . . 218

XII. Vertex of the Brain in Advanced General Paresis (Clouston) . . . . . 248

XIII. Normal Capillaries of the Cortex and Normal Nerve-cells Compared with those in Advanced General Paresis (Clouston and Ford Robertson) 262

FIG.

1. Station in Tabetic Form of General Paresis (Church-Peterson) . . . . . 91

2. Arthropathy of Knee-joint in General Paresis (A. S. Roberts vide Dana) . . . . . 151

3. Hematoma Auris in General Paresis (Williams) . 162

4. Degeneration of Nerve-cells in Cortex with Proliferation of the Spider or Scavenger-cells in General Paresis (B. Lewis) . . . . 254

# GENERAL PARESIS.

## CHAPTER I.

### INTRODUCTORY.

In undertaking the study of this mutable malady, one will promptly find that he has entered upon no easy task, if his object be to gain a comprehensive view of it. Let this, however, be no discouragement to the earnest student, though he discover, as he certainly will, that many of the authorities differ in the interpretation of its important features and that some there are who, as partisans of the dual theory[1] of general paresis, deny that it comprises a true entity, distinct in symptoms and course.

The student should especially keep in view that in this disease he is dealing with a gradual decay of the higher nervous tissues, a decay which destroys the nerve centers, and spreads progressively both in breadth and depth.

The causes may differ greatly; but whether the disease originates from premature disease of the arteries, from over-strain and insufficient nutrition, from imperfect rest and reproduction of nerve tissue, or from the changes of relations between brain and

[1] M. Delaye, a French writer in the early part of the last century, was the first one to advocate its duality, and since then there have been many adherents to this theory. At the present day this belief is held by a number of prominent authors. Of its advocates, Reginald Farrar, in the Journal of Mental Science, 1895, has made the most vigorous attack in late years upon the specific unity of general paresis.

vessels resulting from injury or disease, certain facts concerning its development are without contradiction: (1) The disease is invariably progressive; (2) its action upon brain or cord is very slight in the early stage and difficult to detect; (3) it rarely affects a large part of the brain or nervous system suddenly; (4) it affects first the highest intellectual and motor arrangements, which is followed necessarily by an impairment of the associated mental phenomena; and (5) in whatever manner the symptoms may differ in the beginning, depending on the regions of the cortex involved, and however much they may vary in mode of onset, progress and duration, towards the end of the disease they are markedly similar (Savage).

The date of the discovery of general paresis is not more remote than eighty years ago; and to French pathologists indisputably belongs the credit of having first recognized and described it as a special form of disease. There are, however, passages in the writings of Willis, the anatomist (1670), indicating a knowledge of the association of paralysis and insanity; and Haslam[1] and Perfect, at the close of the

[1] J. A., a man, forty-two years of age, was first admitted into the house on June 27, 1795. His disease came on suddenly while he was working in a garden, on a very hot day, without any covering to his head. He had some years before travelled with a gentleman over a great part of Europe; his ideas ran particularly on what he had seen abroad; sometimes he conceived himself the king of Denmark, at other times the king of France. Although naturally dull and wanting common education, he professed himself a master of all the dead and living languages; but his most intimate acquaintance was with the old French; and he was persuaded he had some faint recollection of coming over to this country with William the Conqueror. His temper was very irritable, and he was disposed to quarrel with everybody about him. After he had continued ten months in the hospital, he became tranquil, relinquished his absurdities, and was discharged well in June, 1796. He went into the country with his wife to settle some domestic affairs, and in about six weeks afterwards relapsed. He was re-admitted into the hospital August 13. He now evidently had a paralytic affection; his speech was inarticulate, and his mouth drawn aside. He shortly became stupid, his legs swelled, and afterwards ulcerated; at length his appetite failed him; he became emaciated, and died December 27 of the same year. (Haslam on Madness, London, 1809.)

eighteenth century, reported cases having a combination of the two series of symptoms, of paralysis and dementia, but both of them failed to recognize, as did Willis, the clinical import of their observations. In 1815, Esquirol, under the head of monomania in his Maladies Mentales, noted the fatal nature of paralysis with failure of speech, but he also did not have a clear conception of general paresis as a distinct type of disease.

It is to the pupils of Esquirol that the distinction belongs of actually bringing to light this much-disputed disease. Georget (1820) described it under the name of chronic muscular paralysis. Bayle (1822) referred both the muscular and mental symptoms in these cases to arachnitis or chronic meningitis, and later (1825) he observed the changes in speech and the motor disorders. About the same time (1824) Delaye wrote of it under the title of incomplete general paralysis, believing that it was a softening or atrophy of the brain with adhesions of the membranes. In 1826, Calmeil, another pupil of Esquirol, published a complete account of the physical symptoms and anatomical lesions of general paresis, under the title of paralysis observed in the insane. The subject was studied with much zeal by these observers, and especially by Calmeil, to whom is frequently ascribed the merit of having been the discoverer of it. Georget, Delaye and Calmeil regarded the malady as a special form of paralysis superimposed upon the insanity, that is, as a complication of an already existing disease. Bayle, on the contrary, formulated a new theory, declaring the affection to be a distinct entity; he made expansive delusions its necessary characteristic symptom, assigning it a regular course and dividing it into three successive periods — monomania, mania and dementia. Both Bayle and Calmeil were of the same belief

respecting the anatomico-pathological characters, in considering pathognomonic the adhesions existing between the meninges and the convolutions.

The views of Bayle gained ground slowly, and in 1838 Parchappe, a prominent observer, reached the conclusion, also, that general paresis was a distinct form of insanity, with characteristic symptoms of motor and mental disorder, which he designated as paralytic insanity. Requin (1846) proposed a restriction of this view. He contended that the malady, to which he applied the prefix "progressive," may exist without mental symptoms, conceiving the paralysis to constitute the essential part of the disease, although a certain degree of dementia was admitted to be the customary sequel of the paralysis. This theory was further confirmed by other able writers, such as Sandras, Lunier and Baillarger. The latter, who took an important place in the discussions for many years, claimed that the dementia and not the delusion was the chief symptom of the disease, and (1846) he it was who first called it paralytic dcmentia, a name which has been adopted by many writers even to the present day.

From this time forth investigators multiply, and numerous become the writers on the subject. In 1858 a long and animated discussion took place in the French Medico-Psychological Society, which confirmed the principle of the essentiality of general paralysis. For a long time the clinical analysis of the disorder occupied the attention of the authorities, but of late years the investigations have been directed more to the pathology of the affection.

In the latter part of his career, Baillarger returned to "the dualist theory, which he at one time abandoned, that admits the existence of two quite distinct disorders, susceptiblc of existing associated with each other, or separately: (1) Paralytic dementia, the principal

disease; (2) paralytic insanity, the accessory affection" (Regis). The adherents of this theory are to-day numerous.[1]

Again, some authors, for instance, M. Ball of Paris, look upon general paresis, as a generic term, embracing a variety of diseases, differing in etiology, symptoms, course and final termination.

Hence, we see that there have been in the past several theories respecting the nature of general paresis, of which the prominent ones may be briefly stated thus:

1. As a complication of insanity:
2. As a distinct form of insanity;
3. If not as a group of cerebral or cerebro-spinal affections, at least as a paralytic dementia, to which is associated more or less frequently, and under various conditions, insanity (Regis).[2]

As an illustration of the former rarity of this disease in this country, it is said that the eminent alienist, the late Dr. Luther Bell, of Massachusetts, at the time of his first visit to England, about fifty years ago, had never recognized a case of general paresis, a statement which seems almost incredible considering its rapid increase and spread in late years, especially during the past quarter of a century.

[1] "One of the questions which general physicians ask is, whether this same disease, which is called general paralysis, can exist without mental disorder. I always reply that I have seen several cases who for years have exhibited bodily symptoms in every particular coinciding with those found in the patients in our asylums suffering from general paralysis of the insane, and yet without the slightest evidence of insanity, even without any loss of memory or self-control; so that, in fact, the patient was sound in mind although a general paralytic in body. The reason, I believe, that the condition has hitherto been misunderstood is, that asylum physicians rarely see cases in general hospitals; and general physicians only occasionally have the chance of watching true general paralysis. In my opinion, general paralysis may develop in any of its forms without mental symptoms for a considerable length of time; but unless cut short by some intercurrent or accidental cause, mental deterioration shows itself before the end. The symptoms may be only those of weak-mindedness, and may be so slight that comparatively little importance is attached to them." (Savage on Insanity, p. 277.)

[2] Mental Diseases, Bannister's translation.

## CHAPTER II.

### GENERAL PARESIS.

**Synonyms.**—General Paresis, Paresis; General Paralysis, General Paralysis of the Insane; Paretic Dementia, Dementia Paralytica (Krafft-Ebing), Paralytic Dementia; Progressive Paralysis of the Insane.

*Other Titles:* Progressive General Paralysis; Progressive General Paresis; Paralytic Insanity; Progressive Paralysis; Diffuse Interstitial Periencephalitis; Paralysie Générale des Aliénés; Folie Paralytique; Periencephalo-Meningitis Diffusa Chronica (Calmeil); Paralyse der Irren; Paralytischer Blödsinn; Allgemeine Paralyse der Geisteskranken; Psicopatia Paralitica (Morselli).

**Definition.**—General paresis is a subacute, or chronic, degenerative disease of the brain, often extending to the spinal cord and the large nerve trunks. It is marked chiefly by progressive enfeeblement of the mind and concomitant paresis of the entire body. Mentally, there is moral and intellectual perversion, with an abnormal sense of well-being, or actual delusions of exaltation, followed by slow dementia, to which is generally superadded insanity of the maniacal, melancholic, or confusional type; physically, there is gradual development of tremor, pupillary changes, loss of coördinating power, especially of speech and gait, trophic complications, occasional epileptiform or apoplectiform seizures, and finally paresis.

**The Mode of Commencement.**—The very early indications of general paresis are frequently so ill defined as to

escape recognition, and their true import, even by a competent observer, cannot always be estimated, the difficulty being less when they are more or less significant, and the ensemble receives due consideration.

There are two accepted forms of onset—the gradual and the sudden. In the latter, there is nothing to warn before "the storm has broken." A sudden attack of acute mania may be the precursor; or a variety of cerebral seizure, such as an epileptiform, or apoplectiform attack. Some writers believe that in these attacks and, also, in the cases where a violent shock or an accident appeared to be the beginning, the real beginning was much earlier and to be sought in some of the vague warnings enumerated in the prodromes. According to these observers, and with plausibility, the beginning of the disease is seldom sudden in onset.

It should be kept in view that the changes at first are inconsequential when taken by themselves, but grow gradually more distinct in the progress of the invasion. The course of the disease depends, also, on its type, whether (*a*) depressive, (*b*) expansive, or (*c*) demented; many cases are early tinged with a slightly somber or melancholy aspect, which may pass unnoticed.

**Stages of General Paresis.**—It has been customary for authors to divide this disease into stages, but there is considerable variation in these classifications; some writers make only two or three divisions, others four or five. It may be seen, therefore, from this diversity that these divisions are merely artificial and that the demarcations are not readily discerned in practice. There is, too, not much utility in this classification, excepting as it may be of aid in the study of its evolution, and for purposes of clinical description. But here even this separation of the disease into stadia may be accounted

by some as of limited value, because of the wide diversity of its course. In some cases no distinct stage can be traced; in some the physical symptoms are prominent from the beginning, in others not; sometimes the course is rapid, at other times it is slow; and so too with the epiphenomena, they may be present or absent in varying degree.

In these pages, for the reasons above mentioned, the plan has been chosen, of making four typical divisions, which correspond to the following order:

1. A prodromal stage, or period of moral and mental alteration.
2. A stage of decided mental alienation, or of dementia only.
3. A stage of chronic mental disorder.
4. A stage of fatuity (Mickle).

Or thus expressed:

1. A prodromal stage.
2. That of fibrillar tremblings and slight incoördination of the muscles of speech and facial expression, and of mental exaltation with excitement.
3. That of muscular incoördination and paresis, with mental enfeeblement.
4. That of advanced paresis, with little power of progression, almost inarticulate speech, and at last paralysis, with mental extinction (Clouston).

### A HYPOTHETICAL CASE OF GENERAL PARESIS IN THE PRODROMAL STAGE.

Male, 40 to 45 years old, single, of robust habit and good previous general health, (in some cases a syphilitic history may be obtained); no distinct insane ancestry; of sanguine temperament. Mentally intelligent, more rarely accomplished or highly educated; active, energetic, speculative, sanguine of success; disposed to be changeable and fickle. Fond of society, a bon-vivant, and self-indulgent in every way with tendency to excesses in drink and sexual

indulgences. After a sudden reverse in hopes, preceded by a period of mental strain, patient shows change in character and conduct; rarely, by great depression, usually by an unusual mental excitement, often amounting to a distinct elation. The patient's spirits are high, such as an extra glass of alcoholic stimulant would give. The patient busies himself in various matters, exhibiting a constant garrulity and an entire absence of reticence, with egotistical bragging; he will button-hole persons, almost strangers, and relate to them his confidences. He exhibits very little physical change at this epoch. His elevation may lead him to social indulgences or drink, (thus, alteration in behavior is frequently ascribed to intoxication). Mental character is one of restlessness, followed by mental confusion; patient makes *faux pas* of various kinds, such as shown in the following incidents. A gentleman walked into a drawing room without removing his hat and lighted a cigar. A poor woman openly stole some plants from a window. A woman coming out of a church took a handful of silver from a plate held at the door without any attempt at concealment. A married woman began to undress herself by a country roadside. A woman ordered a pair of breeches for her husband, a bricklayer, to be made of moire antique. (Abstract, Sankey, Lectures on Mental Disease, p. 255.)

### TYPICAL CASE OF GENERAL PARESIS IN A MAN.

Clarence E., married, aged 37; wine merchant. No insane relatives; not very sober habits. Anxiety the supposed cause for this first attack of insanity. He had followed many different occupations during his life. He had had a fit before admission. On admission, he had mania with exaltation; imagined he was the eldest son of God; was formerly a great duke; and had unbounded wealth; also said that he slept twenty to sixty hours a night. Occasionally he would say that he had lost all his delusions, but it required only a short conversation to get evidence of their persistence. He could not appreciate facts. He lost strength and flesh rapidly during the first few months of

his admission, and there was an increase of tremulousness in his facial and lingual muscles. He walked about restlessly for hours and wrote endless letters to great people. His memory was markedly affected and his sense of color was changed. Six months after admission, for a few days, his speech became affected, and there was loss of power in his extremities, but there were no distinct convulsions. He recovered from this and ate and slept well. He had pneumonia in about a year after admission. During the next year he was much better, walked in the garden. However, his handwriting was shaky, and early in the next year, two and a half years after admission, his aspect became dull and expressionless. He was unsteady in his gait and on several occasions fell, but his muscles were fairly well developed. His memory was failing and he was easily moved to tears. His average temperature was 98.4° in the morning and 100° at night; he had no control over rectum and bladder, and had loss of sensibility. In May of the same year, he had a convulsive fit, from which he recovered, and for a month afterward gained flesh. In the following year, he was fat, flabby and demented, unable to stand; reflexes very exaggerated; appetite good; limbs somewhat contracted; right pupil large; he laughed senselessly when spoken to and resisted interference. He was threatened with bed-sores. In latter part of same year, he had severe convulsion affecting right side; he recovered, but was in every way weaker, legs becoming contracted and he ground his teeth. During the next year and as long as he lived he never regained consciousness; swallowed food automatically but never articulated. Optic discs were pale and atrophied, but he could hear and see a little. He remained in bed, his limbs drawn up, till August, when he had a fit which was preceded by a condition of extreme reflex irritability; head was drawn to right side; right pupil was large; he had clonic spasms of lower jaw and occipito-frontalis muscle. He recovered from this, but died, worn out, in March of the following year, about five and a half years after admission. (Abstract, Savage on Insanity, p. 299.)

## CHAPTER III.

### THE SYMPTOMS OF GENERAL PARESIS.

**The Prodromal Stage.** (*First Period.*) Mental Symptoms.—There is, perhaps, no disease that begins more gradually than general paresis, for the period of inception, although varying within wide limits, may be prolonged over months, or even years. If one has the opportunity to observe closely the life of the paretic and at the same time to gather from his friends all of the data obtainable, it need not cause surprise to find that the first changes in the feelings, the intellect and the organic functions of the subject, which mark the appreciable beginning of the disease, extend into the past for many months, and sometimes for a number of years, prior to its apparent onset.

At first, the patient is conscious of feeling that he is not in his normal condition, but as the disease advances, he loses the power of discrimination, and he then insists that he is entirely well. Savage refers to a physician who correctly diagnosed his own case as that of paresis, but soon forgot his misfortune in the blighting effects of the advancing disease.

In another case, the patient pointed to the top of his head, and said that, like Swift, he was "going first at the top." For the moment he appeared emotional, but in the feeling of bien-être, which was developing, he forgot his troubles, when induced to speak of his fine capabilities. Lewis tells of a talented mathematician, in whom the early symptoms were intense despondency and sudden lapse of attention and memory. Often when solving a problem, he would cover

his face with his hands, and rising from his chair with a pained expression, hurriedly remark, "It's of no use, it's all gone!" He frequently confessed how painful such a state was to him, realizing most fully the sad condition of his mind, before the final disruption occurred.

In former years, alienists were disposed to set the limit of the initial stage at a much shorter length than experience teaches us now to do. Formerly, it was placed at two or three years, or less; to-day, it is not unusual to see it placed at eight or ten years. There is a preparalytic period, analogous to the pretaxic period of tabes.[1]

Generally, the earliest signs observed are those of mild brain failure, indicated by a somewhat enfeebled state of the mind. This mental failure is shown by a change in the disposition and character of the patient, not at the start very pronounced, but soon issuing in habits and conduct at variance with his normal proclivities, which become more and more bizarre with the lapse of time. An intelligent merchant, in good social standing, acquired an ambition to become a pugilist, frequented low places of amusement and taverns and became acquainted with several prize-fighters to whom he paid large sums to be allowed to beat them (Spitzka). The change of character may be detected also in some loss of interest by him in his affairs, or in an impaired ability to attend regularly to them. There is some obtundity of the intellectual and volitional vigor of the mind, and the judgment is more or less clouded. He is varyingly absent-minded, indifferent, apathetic, or negligent in both his domestic and business relations. He seems unable to keep his attention for a length of time to any fixed purpose, albeit he can follow out in a fairly correct manner the routine of his daily life, if its duties be not too

THE PRODROMAL STAGE.

Since 1885 it has been the custom to photograph systematically the patients at the State Hospital, Norristown, Pa. From this large collection of photographs of the insane, these and most of the succeeding types herein shown, have been selected by permission.

intricate or exacting. It will be seen, also, that he is especially deficient in initiative action, and when he actually takes up a new project his attention soon wanes, and his interest flags. Moderate exercise causes unwonted fatigue of mind and body, which if pressed may end in great confusion of ideas. Folsom observed a marked change for the worse in the tremor, which appeared in the handwriting of a doubtful case, after the tiresome effort of a long walk; and Lewis describes a case where the man was thrown into convulsions by pressing him into close application, in the solution of a mathematical problem.

Transitory states of forgetfulness uniformly occur, to which cause some authorities attribute many of the inconsistencies and absurdities that characterize the disease, particularly at a later period. It is related by medical jurists that a physician prescribed sixteen grains of tartar emetic, instead of one sixteenth of a grain, and a Russian doctor was sent to Siberia for a similar mistake.

There is loss of memory, which is shown in many ways, chiefly for recent events and for proper names; it is seen in the misspelling of words when writing, omitting letters, or leaving words out of sentences; it leads to incongruous acts; disregard of personal rights, and neglect of social duties and courtesies. One patient sent home a wagon-load of snow-shovels; another bought a dozen sets of weights and meas ures; another sent out agents into the country and purchased all the turkeys' eggs he could get, and another drained the florists of tulip bulbs. A gentleman, as an early symptom, stole the silver forks and spoons from the tables at which he was invited to dine, and was at length detected with a silver sugar-bowl in his pocket (Hammond). "We see, in short,"

says Lewis, "in his whole manner of life a weakening of mind, such as may be noted in the commencement of senile dementia, but which occurring in a fine and vigorous man of, it may be, thirty-five, too surely indicates the ruin even now commencing."

The feelings are intensified and readily stirred, or are excited by trivial causes. There is frequently, even at this early stage, much display of irritability, restlessness, fickleness and temporary loss of self-control under excitement; and, also, a change in the affections, so that persons previously dear to the patient may become hateful to him. From the first, often a sense of well-being is present, which may issue in despondency without adequate cause, but just as frequently in sudden alterations of mood from one extreme to another. Innumerable instances of irritability could be given. A paretic was turned out of the theatre, because he was unable to show his ticket (having in his amnesia either thrown it away or forgotten where he put it) and then broke a large pane of glass to climb in by another way (Spitzka). Another, at a fashionable club, of which he was a member, finding some delay in getting a cigar, impatiently kicked out the glass of the case and began to help himself.

Sometimes the forming period of general paresis is called the medico-legal stage, because of the moral perversion so commonly seen at this time, which may lead the person into difficulties that call for the intervention of the law. The disease not being recognized, the patient is mistaken for the ordinary offender, and not until he has been arrested, or perchance later, does the true state of the case become revealed. De Boismont gives the case of a man who began thieving eight years before the diagnosis of general paresis was made. A reputable plumber, among the writer's

cases, was arrested for fraudulently tapping a city gas main, without a certificate, nearly a year before other discernible symptoms appeared. In another case, a sedate married man was arrested, three years before he was adjudged insane, for indecent assault on a colored woman, and he was emulged of a large sum of money before released from his unfortunate plight. It is, therefore, not an infrequent experience in asylum life to receive sufferers of this disease who have been subjected to the ordeal of imprisonment for misdemeanor or some grade of crime.

When a few or more of these signs have existed for a variable period, the true nature of the malady becomes better defined by symptoms of a more marked character. The sense of bien-être passes into a general feeling of elation, an unbounded egotism shown by the exalted opinion that the patient has conceived of his attainments, of his prowess, or of his social and political eminence. The elevated feelings beget a restless spirit, inducing unusual and useless activity. It especially applies to the ordinary affairs of life; there is a scheming disposition, which leads into extravagance of all sorts greatly in excess of the patient's resources, and may result in a change of occupation. Generosity and avarice go hand in hand; while just debts are ignored and the family neglected, articles of doubtful utility are bought recklessly, or necessary ones exchanged for those of no value.

It will be perceived that these signs indicate only an alteration in the character of the individual, brought about by a mild enfeeblement of the mind, requiring to be looked for sharply, and not a true alienation. This altered condition is compatible, as we have seen, with the performance of customary duties, and consequently may readily be overlooked by the casual acquaintance. "The patient," Lewis very justly says,

"hovers on the borderland of delusional perversion. The judgment is enfeebled and clouded—not necessarily perverted—and the condition is, in fact, one of over-balance."

**Prodromal Stage.** (*First Period.*) Physical Symptoms.—The concomitant physical symptoms, becoming progressively graver, should be sought primarily in some of the indefinite manifestations, which, taken alone, may be misinterpreted as purely of a functional nature, or lead to error by being mistaken for those of neurasthenia, with or without hysteria, or uncomplicated cerebral asthenia. Ballet reports that one of the most brilliant French novelists of recent years was energetically treated, for several months, with douches, as a neurasthenic, before the obvious signs of general paresis were observed. Stearns tells of a paretic, who, unable to attend to business on account of restlessness, was treated by the family physician for malaria.

There is an impressionable state of the vaso-motor system, giving rise to palpitation with flashes of heat to the head and alternate pallor and redness of the face. The physiognomy, in some cases, changes; the face, then, becomes fat and loses its expression and no longer reflects accurately, as in health, the workings of the mind. Fleeting pains of a neuralgic or rheumatic character are felt in different parts of the body, or the pain may be localized; then may follow cardialgia, epigastralgia and rhachialgia. A woman patient had had neuralgic pains six years before mental symptoms appeared. Whenever these pains subsided, as they frequently did, there occurred numbness and, at times, loss of sensation in feet and ankles (Stearns). Insomnia is frequent; sleep being either absent for longer or shorter periods, or disturbed by dreams and nightmares, or is unrefreshing. The pa-

tient complains of general malaise, and often of dull headache, which is either [1]sincipital, [2]temporo-frontal, or [3]occipital. Some cases speak of girdle pains, as if tight bands were being drawn round the head, or round the body, as in locomotor ataxia. Local anesthesias or paresthesias with tingling and formication of the skin are not uncommon, as well as various painful sensations, of heat, of cold, and of pressure; loss of sight, optic neuritis; affections of hearing; alterations in the senses of taste and smell; and sometimes sensations of electric currents in the head. Some patients have the feeling that they are walking on air, and experience little or no fatigue after much exercise; others are dull, heavy, and are easily tired without receiving relief from rest in bed. Vertiginous attacks occur, but when mild they are liable to escape attention; also hummings, whistlings, and sounds of bells in the ears; and almost always there is an abnormal reaction to alcohol and drugs.

There may be digestive disorders, such as gastric crises (Hurd), capricious appetite and irregular action of the bowels. The circulation is sluggish and there is often a dull leaden color to the skin, as seen in persons who suffer from hepatic disorders.

In the female, dysmenorrhea and amenorrhea are often noticed, the latter more frequently than the former.

At this early period, even, there may appear motor troubles which from a diagnostic point are most significant. Among these may be mentioned a tremor of the muscles about the mouth and naso-labial folds; a fine fibrillary quivering of the tongue, or a coarser twitching of individual fibres; and an incoördinate jerky protrusion of it under voluntary effort. A slight slur or hesitation in the speech may sometimes be detected. Pupillary anomalies (contracted, irreg-

ular, sluggish, or unequal pupils) may also coexist, or may antedate other symptoms for a long time (Griesinger). In one of Campbell Clark's cases the only motor symptoms observed for years were small pupils, tremor of the tongue and of the left depressor alæ nasi. Not least in value, as forming a highly pertinent group of symptoms, are certain epileptiform, or apoplectiform seizures, which, occurring at any stage, are grave forebears. In point, Folsom relates these two interesting cases: An express-delivery driver had epileptiform seizures for five years before he became so forgetful and inattentive that he was discharged. He then had other symptoms of general paresis; a prodromal period of five years resulted in this case. A Boston lady was treated in the Isle of Wight, for four years with bromides for epilepsy. After her return home, she was supposed to have nervous prostration and convulsive attacks of hysterical origin. A diagnosis of general paresis was made by Folsom, and her subsequent career proved it to be correct.

Some of the authorities, from two of whom these selections have been made, tersely summarize the prodromal symptoms: Take note of early fatigue, fainting or other fits, loss of smell, vague optic disc changes, unaccountable knee phenomena, unusual headaches, neuralgia and sciatica, changes of character, progressive loss of the highest control, moral lapses and instability in various forms (Savage).

When a man in early middle life comes before us who has shown a recent alteration in his whole character, restlessness, irritability, together with utter indifference to the needs of others, and pronounced egoism; and when on examination we can demonstrate the presence of pupillary anomalies and abnormalities in the deep reflexes, we are fairly safe in

concluding that we have to deal with a paretic (Berkley).

A CASE OF GENERAL PARESIS IN THE PRODROMAL STAGE.

A patient, æt. 46, had been in an asylum a week, having been brought over from Ireland. No stutter in speech, no irregularity of pupil, no contraction or dilatation. He had full power and perfect coördination of both hands and feet. He could play billiards and the piano well; walked with a long swinging stride, which was possibly habitual. Speaking generally, the bodily signs of general paralysis were absent. Mental symptoms afforded more information, although these were not very marked. He had no very extravagant delusions, thought himself wonderfully lucky, as he had bought five or six horses for small sums from which he was to realize some hundreds. He was gay and jocose, on the best of terms with his friends; he showed loss of memory, for he said that he had left Ireland three weeks before, whereas it was only one. Although told that another physician and myself were doctors come to examine him, he never tried to persuade us to let him go, though he said he was quite well and needed no doctors. He was pronounced paralytic: (1) On account of the peculiar "larkiness" and hilarity exhibited to two perfect strangers who had come to examine him; (2) his self-satisfaction and ideas of general good luck and success; (3) his indifference with regard to being released; (4) his loss of memory. (Abstract, Blanford, Insanity and its Treatment, p. 302.)

A CASE OF GENERAL PARESIS IN THE PRODROMAL STAGE.

A man forty-five years old, vigorous, married, of a healthy family; never had serious illness; denied history of syphilis. An extraordinary salesman with a salary of $4,500 per year; he lost his position, because he had lost his faculty of making ready sales. His wife found that he had not saved any money, that he could not tell what had become of it, and that he could not be depended upon to earn anything. He became indifferent rather than idle; placid, apathetic, absent-minded, unenergetic; therefore

he could not get a position. He performed the ordinary duties of the house. Subsequently, he went to the door inadequately dressed, and in other respects he showed a lack of a sense of delicacy, but he did not realize it. He became inconsiderate of his wife, and he showed decreased sexual power, and increased desire. Upon examination, it was found that he could converse intelligently; he had lost some flesh and strength, but had good appetite. Unnaturally deliberate in conversation, somewhat sluggish in speech; a lack of animation; a failure in quickness of memory and intellectual promptness such as no one worth $4,500 a year would have. On this account, he went to an asylum, where marked intellectual impairment soon appeared. He died a paretic. (Abstract, Folsom, Rept. Trans. Assoc. Amer. Phys., p. 6.)

A CASE OF GENERAL PARESIS IN THE PRODROMAL STAGE.

A strong, healthy man in prime of life, had overworked himself to get education; became successful lawyer; married, three children and lived well. He was made mayor of his city, and chairman of local Republican committee; a witty and fluent speaker, in better spirits than usual. It was afterward noticed that he lacked his usual good sense and judgment. He grew careless in business, and slighted his friends, so that he became very unpopular. On one occasion, promising to speak at a Republican party meeting, he went to another city and spoke before the opposition, ably denouncing his own party, but never giving an explanation for disappointing the audience before which he had promised to speak. His business letters needed to be revised before leaving the office. His mistakes were supposed to be due to his many outside interests. He was counsel in a contested will case, involving millions, two years after the beginning of the symptoms just related. Physical weakness was the only symptom to suggest possible illness to his family; he had fallen once or twice in the street; and had once been faint and prostrated for several minutes. Finally, a consultation was held, his house

was turned into a hospital, and he died a typical case of general paresis. (Abstract, Folsom, *ibid.*, p. 7.)

A CASE OF GENERAL PARESIS IN THE PRODROMAL STAGE.

An English actor, robust frame and healthy. His wife observed that he could not commit or play new parts; lost animation and force in his accustomed parts; with no conspicuous faults lost his position. Irritable, indifferent, apathetic; slow in mental and physical action; deliberate, tardy speech; facial expression lost in interest and force; he had beginning atrophy of both optic discs. One year afterward, he began to show ataxia and personal exaltation; and he was finally sent to an asylum, where he soon died. (Abstract, Folsom, *ibid.*, p. 12.)

A CASE OF GENERAL PARESIS IN THE PRODROMAL STAGE.

C. D., male; æt. 38; family history negative; duration of disease two or three years. Friends have noticed for some time that he has been erratic and subject to loss of control; he was easily excited to anger or violence; he is rather forgetful; he has lost interest in his personal affairs; no mental symptoms present. He shows the fatuous expression common to the disease, tremor of tongue and face (slightly); speech clumsy. He has had two or three attacks of aphasia lasting for several hours to a day; his physical condition is good and at times there seems to be great improvement in all the symptoms. (Abstract, Fisher, E. D., Journal of Nervous and Mental Diseases, Vol. 18, p. 825.)

A CASE OF GENERAL PARESIS SHOWING MOTOR SYMPTOMS FOR A LONG TIME WITHOUT MENTAL IMPAIRMENT.

Married man, æt. 38 (no insanity in his family), active and industrious. Noticed a change in his handwriting and hesitation in his speech. Pupils were unequal, tongue tremulous, handwriting shaky, with a tendency to drop terminal letters of words. Increased patella reflex, but no change in his mental capacity. Memory good; he was not emotional, and he had not lost any power of self-control.

He has been under observation for years and has shown no intellectual disturbance; he is now earning his living (Savage).

SYMPTOMS OF DEPRESSION IN THE PRODROMAL STAGE FOLLOWED BY REMISSION OF SOME MONTHS.

In one case, the symptoms, which were of weakness and depression, but unmistakably those of general paralysis, passed off, and allowed the clergyman to perform his duties perfectly for some months before he again broke down. (Abstract, Savage, Trans. Ninth Inter. Med. Cong., Vol. 5, p. 400.)

A CASE IN WHICH THE DISEASE WAS NOT AT FIRST SUSPECTED. GRANDIOSE DELUSIONS FOR FIVE YEARS WITHOUT MARKED MOTOR SYMPTOMS.

R. S., æt. 36, had been in America for some years. On admission he thought he was a general and that he owned property in the neighborhood, and shares in several companies. The only motor symptoms observed for years were small pupils, tremor of the tongue, and of the left depressor alæ nasi. There were cicatrices, skin eruptions and other conditions suggestive of syphilis but not very conclusive. He suffered from strange sensations, particularly, he averred, at the sight of these cicatrices, a feeling as if a battery were connected with these spots. He wanted mustard for his mouth "to heat the nerve." Developed delusions of persecution; he became more and more shaky and tremulous; he had an attack of right hemiplegia, after which his speech became more affected, and from that time onward the downward general paralytic course was rapid. He died after being nine years insane. (Abstract, Campbell Clark, Mental Disease, p. 223.)

IRRITABILITY AND INDIFFERENCE TO PERSONAL INTEREST OCCURRING AS PRODROMAL SYMPTOMS.

A patient had a physical encounter with an expressman for leaving one of his trunks on the street instead of imme-

diately carrying it in. On finding himself in the asylum, he walked up to the scales to be weighed with an air of bravado, and said he was glad of a chance to be weighed "gratis." (Abstract, Spitzka on Insanity, p. 189.)

IRRITABILITY AND INDIFFERENCE TO PERSONAL INTEREST AS EARLY SYMPTOMS.

A patient, who threw his knife at the servant because she removed his plate before he had, as he alleged, finished dining, heard umoved, a few hours later, of a loss of $100,000 to himself. (Abstract, Spitzka, *op. cit.*, p. 189.)

INSTANCE OF IRRITABILITY IN A PARETIC AN EARLY SYMPTOM.

A man threw a large bottle of ink at his brother and business partner on the latter's asking him the meaning of a certain entry in the ledger. (Abstract, Spitzka, *op. cit.*, p. 168.)

PRODROMAL SYMPTOMS APPEARING TEN YEARS BEFORE THE DISEASE HAD BECOME ESTABLISHED.

The wife of a patient said that for ten years he had had extravagant ideas as to his powers of money-making and had been more or less erratic, and irritable and occasionally he gave way to violent temper. (Abstract, Sinkler, American Journal of Insanity, Vol. 45, p. 79.)

A CASE OF GENERAL PARESIS WHERE AT OUTSET THE MOTOR SYMPTOMS WERE THE MORE PROMINENT.

M. E., æt. 41. All that could be found wrong in him mentally a year ago was in his manner and carriage rather than in anything he said. He looked a man who thought well of himself, but the weakness of memory, want of method, confusion of ideas and delusions of exalted character were not at first noticeable. The nervous phenomena gave a clue to the nature of the case. The pupils were equal, contracted regularly, the consensual light reflex slight and slow; the direct light reflex was good. No color-blindness; reflex dilatation impaired, but fairly marked on

shouting or electrical stimulation. Smell good, hearing fairly good. Dynamometer R. 100, L. 90. Knee reflexes increased; superficial reflexes and ankle clonus absent. Tongue and speech tremulous, and the facial muscles showed fine tremors when he was the least excited. A few months after admission he had a faint and momentary seizure, probably epileptiform, and since then he has degenerated mentally. (Abstract, Campbell Clark, *op. cit.*, p. 222.)

### A CASE OF GENERAL PARESIS IN THE PRODROMAL STAGE SHOWING MORAL PERVERSION.

A gentleman in prison for bigamy; healthy, 40 yrs. old, married, good character. He was sent to asylum two years before, because he had married a young girl during absence from home. He was slightly exhilarated when he entered asylum; talkative, untidy, no motor symptoms. Subsequently his natural manner returned, and he was considered well; he was removed from asylum and sent to prison. Here it was found that he was inefficient and that he could not concentrate his attention continuously in one direction, although willing to do what he was ordered to do. In time he could not carry potatoes from storeroom to cook; he became very indifferent. Mental and physical strength gradually failed and after two years it was found that he did not do the work because he could not. Folsom found him to be a general paretic. He was sent to asylum with no muscular tremor, or embarrassed speech, no staggering gait or exaltation. Diagnosis was disputed, but typical symptoms finally appeared. (Abstract, Folsom, Rept. Trans. Assoc. Amer. Phys., p. 5.)

### GENERAL PARESIS IN THE PRODROMAL STAGE WITH MORAL PERVERSION.

One patient, an eminent lawyer, who had at one time been on the bench, was detected in stealing engravings from a picture dealer. He walked out of the shop with the prints rolled up under his arm, and had reached the street before it was discovered that he had stolen the pictures. (Abstract, Hammond on Insanity, p. 598.)

## CHAPTER IV.

### SYMPTOMS OF GENERAL PARESIS (*continued*).

AFTER an indefinite prodromal period, the disease, passing into the next stage either by slow gradations or very abruptly, becomes fully established. This is called the first stage of the confirmed affection, which is now easily recognizable, as a rule, by the development of characteristic mental and physical symptoms.

**First Stage of the Established Disease.** (*Second Period.*) The Mental Symptoms.—The mental symptoms of this stage are indicated by a more pronounced expression of those described as belonging to the initial stage. The patient passes from a condition of alteration, as before described, into that of alienation. There is a delusional state of the mind in typical cases, which is characterized by the underlying condition of mental enfeeblement. If the transition be not gradual, or precipitated by a "congestive seizure," there is then usually an abrupt issue into a maniacal state, accompanied with much confusion and vivid hallucinations.

Throughout this stage, when the case is not marked by high excitement, there is commonly a delusional state of mind, and an easy-going self-satisfied air, in the manner of the patient, that emphasizes the peculiarities of his conduct.

The prevailing type of delusion is that of grandeur, which is so prominent and constant an attendant that, since the time of Bayle, it has been regarded as one of the distinguishing features of general paresis. These delusions apply to extravagant notions, relat-

ing to self-importance, strength, or wealth. They do not, at this time, always exceed the limits of possibility, but when within reason they are tinged with the bright hues of exaltation. Vain and confident, the patient is boastfully talkative of the objects of his interest; perhaps he may recount in exaggerated statements his past achievements, which may be partially based on facts; or he builds castles of his future projects.

The sense of well-being and the spirit of restlessness that it engenders, are more pronounced than in the initial stage and pertain chiefly to those interests in his life toward which the patient's attention may be most strongly drawn. Generally, and in varying degree, it is shown in an exaggerated estimate of his own strength, of his worldly possessions, and of his social and political status. He renders himself an object of curiosity, and too often of mirth, by his boastful talk of his extravagant inventions, plans or investments; by too great laudation of his wife and family, or of some other near object of his affection; and by an exalted view of his own attainments, or of his wonderful intellectual and physical powers. Conjointly with sensuality there is an intense vein of religiosity; his sympathies are keenly excited for the welfare of his fellow-beings and he is led into philanthropic enterprises, which have for their end the regeneration of the world.

He uniformly expresses himself as being in the best of spirits and health; and at no time in his life were his affairs and surroundings so much to his taste, nor does he remember ever to have felt so well.

In his emotional state of gaiety and recklessness, his symptoms are much the same as those of mild simple mania, but the enfeebled character of the mind changes the general aspect of the case. He

FIRST STAGE OF GENERAL PARESIS.

may be irritable and at times roused to violence, but he can easily be turned from his purpose and calmed into good-natured compliance. To illustrate: Patient, age 60, was admitted as a criminal. He passed a profligate woman in the public park and, with a weapon in his hand, killed her on a sudden impulse. When questioned about it, some weeks after, he replied with a smile of self-complacency, "Yes, I killed 300 of them" (Campbell Clark).

There is now a persistent tendency to appropriate articles that he can purloin, an increased tendency of the moral perversion that is early seen in the prodromal stage. For the same reason, *i. e.*, mental enfeeblement, "the patient bears no malice, is not revengeful, is usually generous, facile and easily imposed upon."

Maniacal excitement, as we have seen, is sometimes the form of onset of this stage. The excitement may reach the degree of acute delirium, but this form is not met so often at the present day as it was customary to see it twenty-five years ago. After a variable time the acute symptoms may subside, leaving the patient in a comparatively rational state. In due course of the disease there is a return of the delirium, followed again by a partial subsidence of the acute explosion. There may be several exacerbations of this character during this stage, leaving the mind each time more clouded.

The insanity of this stage more rarely may take the form of melancholia with hallucinations, resulting in refusal of food, and with delusions of persecution; or the type may be a stuporous form. There is a type, termed the hypochondriacal, in which the delusions, instead of being grandiose, are marked by the opposite extreme. This condition has been called micromania, in contradistinction to megalomania, a

state of delusive grandeur. The delusions of the former class are as absurd, extravagant, unstable and unsystematized as those of expansion. The patient who was the emperor of the world one day is the poorest beggar the next; the creator of the universe yesterday is thrown into the deepest pit of perdition to-day; and another who had the best brains, a stomach that could accommodate tons of the rarest delicacies, and boasted of having a most powerful body, wakes up in the morning to the discovery that his brains are running out, and that his stomach is gnawed away by wild beasts (Spitzka).

Medico-legally, the question of testamentary capacity is one that is often involved when a paretic attempts to make a valid will. Where manifest injustice, under the will, has been done, there should not be much difficulty in upsetting it. It is not uncommon, owing to perversion and mental enfeeblement, that a "disposing mind" is absent, as manifested by an incapacity of the testator "to understand substantially the state of his family and of his affairs; the disposition of his property as made by the will; and to intend to make such disposition." There is, further, a strong tendency in the pliant attitude of the paretic to a weak yielding to undue influence. One could seldom find, even in the confiding docility of senile dementia, a more subservient trust than these cases often exhibit toward the influences that surround them.

**First Stage.** (*Second Period.*) Physical Symptoms.—The general health of the patient is usually very good. As one mildly exhilarated with liquor, he feels well and vigorous, because his subjective feelings are blunted. In this cheerful frame of mind, free from care and anxiety, all of his bodily functions are performed normally; he is in the enjoyment of a

good appetite and of restful sleep at night. But in consequence of a restless spirit which induces to great activity during his waking hours, the patient is liable to lose flesh, and to appear worn and fatigued. Some of the vaso-motor disorders and sensory symptoms, observed in the initial period, may occur, from time to time, in certain cases, also, in this stage.

The diagnostic physical symptoms are to be sought chiefly in the defects of speech, pupillary anomalies and tremor.

In the beginning of this stage there is little in the speech that is noticeable to the untrained eye or ear. The defect consists in the slow, slightly labored enunciation, as though the patient were speaking with precision; or sometimes there is a lack of promptness in speech, or an occasional effort to enunciate a word. This is followed in time by a blurring of consonants, and a slight thickening of the speech. The patient is able to control individual movements of the parts of the organs of speech, but he is not able to coördinate them sufficiently to produce the usual pronunciation. There is added to this a certain incoherence of ideas, due to the failure of the power of attention. At first the hesitancy of speech is but occasional. There may be only a slight impediment, perhaps, when the patient is tired, regaining control quickly; or by excitement the disorder may be exaggerated for the time, but he soon recovers his normal enunciation. But usually in the latter part of this stage the difficulty of speech becomes more noticeable and fair control of the muscles involved cannot be relied upon.

The pupils are often unequal, or the inequality may not be constant but only occur at times. In other cases they are found contracted; often more or less sluggish to light. They may be irregular in shape,

one or both; and this feature may be habitual, or only occasionally present. Dilatation of the pupils is not so common, which is also marked by irregularity.

The facial expression in many cases undergoes a change. The eyebrows are raised and when the patient is about to speak the occipito-frontalis is brought together with a tremor. The features are generally florid, and the lines which give character to the face disappear. In some cases a dull leaden complexion is seen, in others it is coarse and greasy.

Sometimes in the prodromal period before the mental signs become defined there is an impairment in the coördination of the gait, but this is rare. In this stage, as a rule, the gait is fairly elastic and firm, although there is some ataxy, which may be detected in the uncertainty in turning round quickly and even with slight swaying. Going up and down stairs is sometimes accomplished with difficulty and tripping over uneven surfaces is often noticed.

Tremor is another prominent symptom in this stage, which is seen at first in the muscles involved in speech, as those of the face, lips and tongue, gradually extending to those of the hands and limbs. Occupations which require delicate adjustment and control of the fingers are early affected, although the handwriting remains comparatively steady and natural throughout this stage.

### A CASE OF GENERAL PARESIS IN THE FIRST STAGE.

F. Y., strong, 35 yrs. old, without any known hereditary predisposition to insanity; previously enjoyed good health. His temperament is sanguine, diathesis neuro-arthritic, and his disposition frank, unsuspicious, boastful and hasty. He had always a good opinion of himself; imaginative; had a physiological tendency to exaggeration. His feeling of bien-être was above the average; he was industrious

and at times worked very hard. He had lived well, taking not a little of alcoholic stimulants habitually; eating much, sleeping little; exceeding greatly in regard to sexual intercourse. He had not had syphilis, and showed no signs of it. In recent months "has not been the same"; he had flying pains in the head; was a little forgetful; wanting in application to his work, and was irritable at home. A month ago he began to express an exaggerated sense of well-being, so that a stranger remarked: "What a conceited fool that man is!" He could not settle down to his daily work. This state went on for some time without awakening suspicion of insanity until one morning he announced that he had purchased several hundred pounds' worth of silver plate, and that he had lots of money, having a scheme through which, in a week, he could be worth hundreds of thousands of pounds. His wife found that he had been buying many useless things, besides the plate; he had four gold pencil cases, as presents for people whom he did not know. He was sent off to the country; restlessness increased; constant talking; almost complete sleeplessness; his boastfulness became, in three or four days, exaggerated delusions. He said that he could lift 1,000 pounds, that he was the best rider, swimmer and jumper in the world; he wanted to buy every farmer's horse that he met, never offering less than 100 pounds and would bid another 100, if his first offer was refused. He wrote to the Queen and other notables, offering his services to make their fortunes, and asking them to dinner. In writing, he omitted many single words. A few days later, he was so impatient of contradiction that he struck his wife, but he was usually easily managed. He was sent to an asylum, offering to buy it for £100,000 and later, for £1,000,000. On hearing that they could not get along without it, he said he would build another, the most magnificent in the world, endow it with a million a year, make me physician-in-chief, and get the Queen to make me a baronet, and give me a uniform made of gold cloth. He has been sleepless, destructive of clothing, unclean, in constant motion, facile in some respects, but violent when his commands were not instantly

obeyed. He was not surprised at being brought to the asylum, and felt no resentment towards those who brought him. He walks with a quick step, talks rather fast, and has the least slurring towards the ends of long sentences and in articulating long words with many oft-repeated consonants. There is fibrillar twitching in the small muscles of the lips, and around the eyes, especially when he breaks into a smile. His tongue quivers in lines on its surface, single strands of muscles being affected. His pupils are contracted, irregular in outline, right larger than the left, which is insensitive to light. Sometimes the right is small and insensitive to light, or large and insensitive to light. The expression of the eyes is feverish and strange; skin moist; temperature 99.6°, rising to over 100° at night; pulse full and hard. He cannot sit still; has an abnormal generation of energy; common sensation markedly diminished; sense of smell somewhat weakened; tastes imperfectly; he calls blue wool red. His patellar, spinal and skin reflexes are very acute. He is very easily led from one subject to another; he is very irritable on contradiction. A general paretic will not yield to a show of force. He could walk along a narrow board on the floor all right, but when suddenly told to turn around, he could not do so sharply, but took a circle and that waveringly. (Abstract, Clouston, Mental Disease, p. 379.)

### A CASE OF GENERAL PARESIS OF THE MANIACAL FORM, A REMISSION FOLLOWING TREATMENT.

B., male, married, æt. 35, admitted after an illness stated to be of only fourteen days' duration. Previous history: Entered army thirteen years ago. Before this he had contracted syphilis and was supposedly cured. He had several attacks of fever, and later unmistakable signs of secondary syphilis; but recovered, married, became an accountant and cashier, he being without the necessary education for the position, consequently broke down, due to the mental strain, while his figures were found to be in confusion. On admission, he was maniacal, impulsive, violent and very strong; he was very loquacious, incoherent

and exalted; he said he was second son of God, very wealthy, etc.; he offered gifts of £20,000, etc. He suffered much from insomnia, pupils normal, no tremor of lips or face; no elevation of temperature, organs healthy. The first development of the disease occurred at a dinner at his house, where he had been unusually voluble, and when his wife remonstrated with him, he burst into tears. Two weeks after admission he began to wet his bed, his mania frequently flared out, notwithstanding doses of bromide, throwing knives at those near him, even when unprovoked; exaltation advanced; recognized and deplored his loss of memory. Under treatment (calabar bean gr. one sixth, iodide of potassium, ammonia-citrate of iron, hydrobromic acid) he improved very much. Ten weeks after commencement, the treatment was stopped and he was prematurely allowed to visit his friends, but returned in seven days complaining of headache and insomnia. These were relieved by quiet and hydrobromic acid; he was sent to seaside house for six weeks and then discharged six months after the development of the disease. In ten weeks, he wrote a letter free from the various peculiarities of style usual in general paretics, but saying that his legs were very unsteady, so that while he could play tennis, the fact of knocking one foot against the other was sufficient to throw him down. His mental faculties appeared unclouded, though they were not exposed to any strain. He mingled in society and held his own, but before long the disease returned and he died. (Abstract, Fox, B. B., Journal of Mental Sciences, Vol. 73, p. 389.)

### DELUSIONS OF GRANDEUR.

A gentleman said he could easily run six hundred miles in a minute; that he could fly; that by cutting out his entrails, he should make himself so light that he could jump a mile, and by constant springing could mount higher and higher; that he could speak all the languages. He mixed all his food together on a plate, which he called the kosmos that would make him strong, etc. (Abstract, Sankey, Lectures on Mental Diseases, p. 262.)

DELUSIONS OF GRANDEUR.

One patient proposes to buy up all the water-power in the United States, and let it out to applicants at high prices. He made a table showing, in his opinion, where the power is, its capacity, the price for which it can be obtained, and an estimate for which it can be leased. The profits amount to over a hundred millions a month. Another patient was going into the shipbuilding business, intending to build vessels capable of carrying ten thousand cabin-passengers each, and of making the voyage to Europe in twenty-four hours. (Abstract, Hammond on Insanity, p. 601.)

DELUSIONS OF GRANDEUR.

G. H. believed he had interviews with the Almighty and the Holy Ghost, that he had £40,000 in bank, that he was king of England and therefore accused every one of not paying him proper respect; he promised to clothe the other patients in armor of gold and said the buttons in their clothing were made of his gold. (Abstract, Bucknill & Tuke, Manual of Insanity, p. 313.)

A WOMAN WITH DELUSIONS OF GRANDEUR.

A woman insisted that she was the wife of the Saviour; also of a certain duke, that she had other husbands, more than a million; that God gave her many rare jewels; that she had twenty Koh-i-noors. She exhibited also in these notions a great deal of erotic tendency. (Abstract, Sankey, *op. cit.*, p. 262.)

EXTRACTS FROM THE LETTERS OF A PARETIC, THE EROTIC PASSAGES BEING OMITTED.

My own darling and adored wife Mary: My heart calls you to come to it. Your dear angel presence only can satisfy its constant longing. I count the hours in fear to your coming; a thousand doubts besiege me night and day. For me there is no light nor life, nor cheer, while thou remainest away. Thou art my Peace, my Hope, my

only Fortune and the shining angel of my soul. Oh come to me, for you, alone, are mine and you only can still my doubts and fears. My blessed and lovely sweetheart wife, Mary. You must come to me or my heart will break with grief. Come and we will celebrate our reunion and my perfect health, my love and affection, free from care for a week. You are my Queen, all I have is yours, my heart and my purse. I have never destroyed a single letter of yours. I have preserved them all because my love for you has been so deep and tender, so strong and lofty, so ardent and so sacred that I would have deemed myself guilty of a sacriligious act to destroy even one of them. I have them all preserved and you and I will read them over together some time. I am sure it will recall happy hours and delightful memories of our lives in the past. Let us keep on being happy together, for I never was, and never can be, happy when I am away from your easeful and nepenthe presence. In your charming society I often think I am the one man who is renowned because I really and truly love and am loved by you. Ever since your dear kind, sweet, speaking eyes spoke love into my heart you have been the bright and shining angel of my dreams, as you have been the sole Queen of my loving heart and of my delightful and happy home. My darling and revered wife, I so long to see you that I do believe I'll go crazy unless you come. I am constantly thinking and thinking of you; I never cease to think of you and to bless your dear memory. You are the most blessed wife in all the wide, wide world. I will be, oh so happy when I can get my arms around you. I know of no blissful feeling than to be once again in your sweet, beautiful, gentle, tender and blessed presence. I very clearly see that you are the gentlest and sweetest and the most sensible lady in the wide world. I love you and my dear little boy, J. W. W., esquire, with all the love, passion and vehemence of my heart. And I honor, I dearly love and highly respect the dignified, serene, grand, noble, magnificent and queenly lady, my dear and adored and blessed grandma, X. Y. M. I hope and have prayed to

Almighty God to allow and save my dear grandma from death and sickness.

I realize that my sweet, darling wife, Mary, will very soon come to see me. There is no such other inspiration as is the inspiration of hope. Hope illumines our pathway through the rough places of earth, etc. I hope to be home very soon. I send to my sweet wife, to my dear little J. W. W., esquire, and to my dear and good grandma, X. Y. M., all the great love of my heart and to you my sweet angel wife, Mary, I send ten thousand kisses.

Again he says: I am going home to love my heart's only darling, my sweet, lovely angel wife, Mary, and to enjoy the charming and beautiful society and comradeship of the woman I chose for my bride and wife more than twenty years ago. How well I remember the evening, the hallowed and blessed evening, when I asked you with my arms around you to be my wife and how you then raised your dark, beautiful, speaking eyes timidly up to mine and murmured the blessed "yes" and how then and in a moment our waiting souls met and embraced in one look of recognition and bliss. Oh, that blessed word "yes" you gave me then; God has written it upon my heart forever. Never, never, will I forsake the dear lips which spoke that word nor fail in all loving doubt and affection to my sweet Mary to the end of my life. Life is like a bright river when it springs from the fresh fountains of the heart. It flows on beautifully, forever and ever widening until it reaches the ocean of eternity and happiness, etc., etc.

A LETTER OF A PARETIC IN THE EXALTED STAGE.

"Countess of Elgin and Durham" (but really to Queen Victoria).

"—— House, Royal National Lunatic Asylum."

My dear wife:—I am up to the mark and hope that your system is up to the scratch.

Has John Brown undergone any form of cremation? I am glad to —— him adopting my style of shepherd checked trousers. I hope both queens are well, with Princess Louise, Princess Beatrice, —— that I will give

them all that is necessary in this world and the world to come. Compts. to darling "Eugene." Your affct. husband. (Abstract, Clouston, *op. cit.*, p. 383.)

A PATIENT PRINTED THE PROSPECTUS OF A COMPANY HE WAS ABOUT TO ORGANIZE, TO ACQUIRE FROM THE PRINCIPAL GOVERNMENTS THE EXCLUSIVE RIGHT TO MANUFACTURE INDIA-RUBBER RATTLES. THE FOLLOWING IS THE COPY OF A FEW PARAGRAPHS FROM HIS DOCUMENT.

Everybody, from the infant in arms to the decrepit old man, likes to make a noise in the world. The noise that should be made is a gentle, undulating, penetrating, but not irritating jingle. Experiments show that such a noise has the soothing influence of opium and chloral without their danger. I have established the fact, after expending $10,000,000, that the best rattles for the purpose are made by a silver bell enclosed in a hollow india-rubber sphere, to which a handle is affixed. Thus constructed, the rattle in the hands of either infancy or old age, the youth or adult, the maiden or her lover, the old maid or the bachelor, the widow or the widower, the barbarian or the civilized man, the king or the subject, the gentleman or the ruffian, the honest man or the thief, the Christian or the Jew, the saint or the sinner, the gentleman or the blackguard, the moral man or the hardened wretch who panders to the most depraved appetites of the scoundrels, who fatten on the life blood of the people—all, all, must have the india-rubber, health-giving and mind-soothing rattle.

The undersigned has devoted over two hundred and fifty years, both in this world and in a former state of existence, to the investigation of the properties of india-rubber and silver. He has ascertained, after many failures, and the expenditure of over $20,000,000, that they exercise health and life-giving properties to all men. Rattle and you will live, rattle and you will be happy, rattle and you

will prosper, rattle and you will be successful, rattle and you will be able to procreate more children than the universe can contain.

A company must be organized to carry out the beneficent objects which the undersigned has in view. No subscriptions in money are required, as he has taken all the stock, to the extent of $1,000,000,000. He is now contracting for all the rubber the world can produce, and is about buying two hundred of the richest silver mines in the world. Every man, woman and child on the face of the earth will require several rattles, for, by varying the tone of the bell, different properties are given to the rattle, and hence the same rattle will not do for every person or for every purpose. Come up, therefore, and aid in this grand undertaking in which profits of thousands of millions of dollars will be made every year, and the human race rendered happy. (Abstract, Hammond, *op. cit.*, p. 601.)

## CHAPTER V.

### SYMPTOMS OF GENERAL PARESIS (*continued*).

**Second Stage.** (*Third Period.*) Mental Symptoms. —The failure of mind is most apparent in this stage, and the patient is no longer able to form new ideas, but gives expression to the old delusions, in a desultory, stupid manner, characterized by increasing dementia. They are but the automatic semblance of grandiose ideas, conceived when the memory and the imagination had not lost their strength and scope.

The conduct of the patient assumes the uncertain and foolish actions of a child; and there is no extravagance too bold, nor any absurdity too grotesque, to which his attention may not be invited. He becomes less and less trustworthy and responsible, without limit to the nonsensical lengths to which his caprice may carry him. He loses all appreciation of his surroundings, and all sense of the proprieties or of shame. He gathers together in his pockets rubbish of every description, to which he attaches much value, being able no longer to discriminate between what is his own and what is the belongings or the rights of others.

While careless and neglectful of others, he fails to discern his own interests, and in the matter of personal appearance he is not only thoughtless, but falls into the slovenly habits that at a later period become faulty and unclean to an extreme degree.

At this stage the appetite is apt to be voracious, and in eating he displays the instincts that belong to an animal, rather than to the human kind. Forgetful often of the amount of food partaken, he is ever ready

to indulge, until he reaches the excesses of the glutton. In the latter part of this stage, the rumination spoken of by writers, takes place in long and distressing periods of grinding of the teeth.

**Second Stage.** (*Third Period.*) Physical Symptoms.—Concurrently with the increased mental impairment there is a deepening of the physical symptoms, denoted by graver nervous disturbances. In the first stage the patient usually loses flesh, but in this stage he takes on flesh conspicuously and becomes stout and flabby.

A distinctly impaired articulation is now a marked feature. The character of the speech has often been compared to that of a drunken man. The patient seems to stumble over his words, and at the same time his enunciation is halting and blurred. The labials and linguals prove most troublesome, as may be seen from the attempted pronunciation of such words as "perambulator," "artillery," "immovability," "cavalry brigade," etc., in which the consonants or entire syllables may be omitted, reduplicated, or even misplaced. Alliterative lines are for the most part impossible to paretics, but as they are troublesome to many people in normal condition, they are scarcely a test. At this stage words may be uttered with an evident propelling force, or the speech may be slow and drawling; there is a frequent omission of words, an entanglement of thought, a forgetting of the idea when half expressed.

The tongue can only be thrust out in a jerky manner with great effort, and fibrillar movements on each side of the mesial line may be distinctly seen. The spasmodic twitchings of the muscles about the mouth, and especially those of the upper lip and of the forehead, occurring with the attempted utterance of a sentence or of a difficult word, give an appear-

SECOND STAGE OF GENERAL PARESIS.

ance to the face at times that is misleading. The patient attempting thus to speak, appears to be breaking into a violent fit of weeping (Bucknill).

Excitement adds to the disorder. Words seem to struggle for expression, ideas become confused and as the affection increases the patient may become unintelligible in his gibberings, or he may express, with evident delight, new ideas, and use newly coined words, expressing all in a spasmodic hurry. After such outbursts the speech is more halting than before.

The speech is slow and drawling from the cerebral lesions and stammering or tremulous from the bulbar: "cortical and mental failure are now complicated with ataxia and with paretic defects of articulation."

The pupils are now generally sluggish in reaction, both to light and accommodation; they are also irregular in shape and unequal in size. Another anomaly, one is often contracted and the other dilated, while the relative size and shape of the pupils will be found very perceptibly to change from time to time. The underlying pathology of this condition has evoked much discussion in the past. A further statement of these particulars is given under the section devoted to eye symptoms.

The features have undergone still greater change than noticed before, having become "fat and flabby," and the skin coarse and unctuous. The expression has become dull and stolid and some refer to the contradictory feelings which are falsely portrayed; one portion of the face giving evidence of an emotion which the other does not reveal.

The body settles upon itself, as seen in advanced age, with much stoop to the shoulders. The trunk at times is bent to one side, which may be temporary or persistent.

Tremulousness of the muscles is a prominent symptom. Besides the difficulty of speech due to this cause there is first spasmodic twitchings of the lips and face, which extends to other groups of muscles, controlling the movements of the hands and limbs. Combined with incoördination it soon becomes difficult for the patient to direct his hands and fingers in the performance of the simplest movements, as tying shoes or buttoning and unbuttoning clothing. Shortly the larger and coarser groups of muscles become involved so that the gait gets to be clumsily performed. At first the patient walks slowly with care, planting the feet wide apart; there is swerving at times and the line of progress may even be zigzag. He takes short steps, a shuffling, uncertain gait, being liable to trip when the surface is uneven, or fall when attempting to hurry or turn. Towards the end of the stage the commoner habits—walking, talking, writing and eating solid food—are accomplished with more and more difficulty on account of the muscular weakness, tremulousness and incoördination; at last these habits become abolished.

It is at this stage that congestive attacks, usually as epileptiform seizures, are common. On account of other diagnostic symptoms, they are not longer of much value as confirmatory of the disease, as they are in the earlier stage, but they are now followed by marked deterioration in both the mental and physical phases of the affection. In some cases the seizures may take the form of an apoplectic attack, succeeded by temporary loss of power in one limb, or of one side. These cerebral seizures, which will be treated more at length under another division, vary much in character and intensity, being at times so slight as to attract but small attention, at other times so severe as to imply the greatest gravity.

ILLUSTRATIVE CASES IN THE SECOND STAGE.

R. J. B., admitted to Philadelphia Hospital February, 1895, æt. 51, salesman. Family history negative as to mental and nervous diseases. Patient had a severe blow on the back of the head in 1876, which left him with a headache for several years. He had been a hard drinker. In 1887, after a drinking bout, his friends say that he "acted crazy" for a week or ten days. Recently, he has been indifferent to the wants of his family; developed delusions as to wealth, money-getting, etc.; pawned anything he could get at home; said he stopped runaway horses, etc.; gave checks; signed his mother's name to checks on a bank, where some years ago he had an account; abandoned his religious belief and joined the new order of the "third Christians." On admission, when asked what was his business, he replied: "I have been a manufacturer of the first character of ladies' shoes for twenty-five years. Our firm is a queer combination, me a Friend, two Jews, and a Dutch Roman Catholic, so we never discuss religion. We do a business of $600,000 a year, the profits being 28 to 30 per cent. We make only the best shoes, silk linings, and many have gold or silver buttons." He said he had not accumulated much money because his brothers needed so much of it. "However, I have been left $6,000,000 in the following way: In January, 1877, I caught the runaway horses of a gentleman and no doubt saved his life. He took my name and address, and four months ago when he died he left me $3,000,000, and there was a codicil which said that if not satisfied I should ask for more, and so I asked for $6,000,000 more. I also own two charitable hospitals, which I have endowed for $1,000,000." The patient says that he was "Governor of the State; in 1873 Mayor; at the present time he is United States Senator and has been recently nominated for Select Council"; that he has always had "the biggest majority of any one in this city." In another minute he says he is a graduate in medicine at Harvard, in Berlin, in Paris; that he has practiced medicine for eighteen years; that he has been an "elegant singer and player." He is sleepy-

looking, nervous in action, calm in mind; hardly recognizes his surroundings; calls the hospital the "Hughes Academy." He seemed to believe exactly what he said. February 12, 1895, his delusions of grandeur are growing greater; he sleeps and eats well. February 15, at 5.45 last evening he was determined to leave the hospital and broke a pane of glass with a chair, and when the attendant tried to quiet him he attacked the latter. March 5, transferred to acute ward and placed in bed; he has been perfectly tractable and in one week was allowed to get up. He now estimates his wealth at $150,000,000, $50,000,000 of which he made "in as many minutes"; he is not cognizant of his surroundings; shows no discontent. His face is expressionless and pale; eyes, partial ptosis; pupils small, unequal, the right larger; reaction to light imperfect; accommodation normal; tongue slightly tremulous; knee-jerk exaggerated; no ankle clonus; cremasteric reflex feeble; viscera normal. (Abstract, Dercum, Nervous Diseases, p. 677.)

ILLUSTRATIVE CASE IN THE SECOND STAGE.

F. X., now 45, a clerk. He became affected a year ago. He has gone through a first stage of exaltation and excitement, which for the past two months has been gradually passing off. He has lack of facial expression; face looks fat, heavy and dull; even when he speaks his features do not correspond to his emotions. He is flabby, and has made up in fat for the two stones (28 lbs.) that he lost during the early stage of the disease. He has a contented, facile hebetude of mind, and expresses few wants. He says that he is quite well, and that he can walk, work, sing or do business as well as he ever did; none of which is true, for he is very shaky on his legs and cannot walk a mile. His handwriting is tremulous; he has no initiative mental power; no spontaneity; and no power of volition. He does not obtrude his delusions, but still has them. His pupils are widely dilated, the left more so than the right; pulse is 68 and easily compressible, his temperature 97°, but still a little higher at night. His tendon reflex is dull, also his spinal reflex functions, and

power of swallowing, a little impaired. His speech is markedly affected now and the tone of his voice quite changed. He cannot say such test words as "hippopotamus," "royal artillery," etc. There are still some tremblings about his face as he speaks, but they consist in the incoördination of whole groups of facial and articulatory muscles. He is very kleptomaniacal. The dorsum of his tongue presents a general undulatory surface, when put out. He cannot turn round quickly without risk of falling, or stand on one leg. He straddles a little in walking; he is apt to stumble over small obstacles; and becomes almost paralyzed after a long walk. His muscular movements have no vigor. His urine often dribbles away. He is occasionally noisy at night in a careless way. (Abstract, Clouston, Mental Diseases, 4th ed., p. 384.)

### ILLUSTRATIVE CASE IN THE SECOND STAGE.

A gentleman, æt. 36, owner of a large business; in summer of 1897, family noticed he was "not quite himself"; a transient irascibility and tendency to forgetfulness. In 1898 symptoms increased, and during an illness of his wife, an emotional state was added; next, incomplete paralysis of internal rectus to left eye, for which oculist gave him glasses and said it would be necessary to have it cut if they did no good. The patient became hypochondriacal; he was sent to consult a medical man of note, who called it "neurasthenia." The patient was treated accordingly but the downward course was more rapid. In spring of 1899, alarming mental symptoms supervened and the case came to me; diagnosis of dementia paralytica, in the beginning of the second stage. A few days later, he became maniacal, attempted to kill several people, and probably would have succeeded, had not all deadly weapons been removed. I elicited a history of syphilitic infection ten years ago, also of excesses in alcohol. At first examination, pupils rather small, and reacting slowly to light and accommodation; consensual movements of iris completely lost; knee- and wrist-jerks absent. There had been rheumatic pains for several years,

and skin about plantar surface of feet showed slight anesthesia; insufficiency of both internal recti which dated from a few months before and a slight lateral nystagmus. Well-marked fatuity was a striking symptom with a tendency to alternate silly laughter and depression. Handwriting showed slight tremor; pronounced tremulousness about the muscles of the angle of the mouth and slightly marked speech defect. (Abstract, Berkley, Mental Diseases, p. 172.)

A CASE OF GENERAL PARESIS IN THE SECOND STAGE ATTACKED WITH CONVULSIONS WHICH PROVED FATAL.

H. P., in second stage of general paralysis, was mildly excited and subject to extravagant, grandiose delusions, yet able to read, write, or converse in a connected strain of thought, so long as his delusional ideas were not entrenched upon. Suddenly seized with epileptiform convulsions, commencing on left side of the body, but usually spreading to the opposite side; such seizures occurring several times during the day and night, and lasting for several days together. After their cessation, he was left in a condition of profound imbecility, from which he never rallied; persistent and copious watery alvine evacuations accompanied the attacks. (Abstract, Lewis, Mental Diseases, 2d ed., p. 297.)

THE FOLLOWING "PROCLAMATION" WAS ISSUED BY A PARETIC, WHICH IS AN EXCELLENT EXAMPLE OF THE EXALTATION OF SELF IN THIS DISEASE.

"To all the people and inhabitants of the United States and all the outlying countries, greeting:

"I, John Michler, King of the Tuskaroras, and of all the islands of the sea, and of the mountains and valleys and deserts; Emperor of the Diamond Caverns, and Lord High General of the armies thereof; First Archduke of the Beautiful Isles of the Emerald sea, Lord High Priest of the Grand Lama, etc., etc., etc., do issue this my proclamation. Stand by and hear, for the Lord High Shepherd speaks. No sheep have I to lead me around, no man have I to till me the ground, but the sweet, little

cottage is all my store, and the room that I sleep in has ground for the floor. No chair have I to sit myself down, no meat have I to eat myself down, but the three-legged stool is the chief of my store, and my neat little cottage has ground for the floor. No children have I to play me around, no dog have I to bark me around, but the three-legged stool is the chief of my store, and my neat little cottage has ground for the floor.

"Yea, verily, I am the Mighty King, Lord Archduke, Pope and Grand Sanhedrim, John Michler. None can with me compare, none fit to comb my hair, but the three-legged stool is the chief of my store, and my neat little cottage has ground for the floor. John Michler is my name. Selah!

"I am the Great, All-Bending, Rip-Roaring Chief of the Aborigines! Hear me and obey! My breath overthrows mountains; my mighty arms crush the everlasting forests into kindling-wood; I am the owner of the ebony plantations; I am the owner of all the mahogany groves and of all the satin-wood; I am the owner of all the granite; I am the owner of all the marble; I am the owner of all the owners of everything. Hear me and obey! I, John Michler, stand forth in the presence of the Sun and of all the Lord Suns and Lord Planets of the Universe, and I say, Hear me and obey! I, John Michler, on this eighteenth day of August, do say, Hear me and obey! for with me none can equal, no, not one, for the three-legged stool is the chief of my store, and my neat little cottage has ground for the floor. Hear me and obey! Hear me and obey! John Michler is my name.

"John Michler, First Consul and Dictator of the World, Emperor, Pope, King, and Lord High Admiral, Grand Liconthropon forever!" (Abstract, Hammond on Insanity, p. 603.)

## CHAPTER VI.

### THE SYMPTOMS OF GENERAL PARESIS (*continued*).

THE demarcation between the second and third stages is not clearly defined and may not always be determined unless looked for closely. This is especially true of cases in which no episodal phenomena mark the transition. Cerebral seizures are not uncommon in the latter part of the second stage and when one of these, as an epileptiform fit, occurs, the patient may be thrown abruptly into the third or terminal stage.

**Third Stage.** (*Fourth Period.*) Mental Symptoms.—The progressive failure of mental integrity, which we have seen slowly taking place, finally reaches the point of complete dementia or amentia in this terminal stage. The patient in whom speech-power is practically abolished has now reached the point of fatuity in almost the entire quenching of all of the higher aptitudes of mind. This impairment is seen in all the content of consciousness—thinking, feeling and volition. As one author aptly says: "The patient actually falls into the condition of a lower order of being, more resembling a vegetable with a digestive tube than an animal" (Macpherson).

**Third Stage.** (*Fourth Period.*) Physical Symptoms.—The reduction seen in the mental sphere may also be seen in that of the physical. The prosperous appearance which ample weight gives to the patient in the second stage disappears often in this by evidences of great loss of flesh. The exhaustion and emaciation become so pronounced in some cases as

THIRD STAGE OF GENERAL PARESIS.

the end approaches that the patient is reduced almost to a skeleton.

The muscular incoördination and paresis advance to the extreme degree. The muscular tremor is shown by the utmost trembling and shakiness. The gait gets more and more unsteady until the patient falls with any attempt at taking a step; standing alone unguarded soon becomes impossible and seated his body falls in upon itself, so there is danger of pitching forward on the floor. The impracticability of getting him out of bed soon leads to his complete decubitus. Contraction of his legs, in a flexed position, gradually increases, producing in some cases much deformity.

A marked change takes place in the speech of the patient, which is reduced to the formation of very simple phrases; many of the troubles already noticed still exist but in a more pronounced form. The voice may become rough and hoarse, or it may become weak and monotonous, always the result of relaxing of the vocal cords. Ideas become more fragmentary, word-deafness and word-blindness may follow. Speech becomes more tremulous until the patient speaks very little, or toward the end not at all. In some cases there is an inarticulate shouting, especially at night, while in others there is but an occasional meaningless moan.

The deep tendon reflexes are usually permanently abolished and the pupils no longer, as a rule, respond to light and accommodation. The face has now lost its entire expression, and the paucity of mind is reflected in the vacant look. Trophic changes soon appear in various aggravated forms. The most common and invariable are bed-sores over the sacral region, where not only pressure but irritating discharges tend to increase the complication. It is occasionally stated that bed-sores have their origin in poor nursing and that the occurrence may be ob-

viated by care and skill. There can be no doubt that much can be done in this way, as a preventive measure, but there are some cases where no precaution can avail, when even the contact of bed-clothing is sufficient to produce sores and every pendent point, knee, elbow, heel and back may be the seat of invasion. In some cases the nervous enervation is so great that erythemas, abscesses, perforating ulcers of the foot, the shedding of the nails and teeth and extensive sloughs of different parts of the body may be encountered.

In this helpless state the wretched sufferer lies day after day, with nearly every semblance to a rational being extinct, until death puts an end to the scene.

ILLUSTRATIVE CASE IN THE THIRD STAGE.

J. E. J., æt. 44, now presents the conditions of the final stage, the previous stages having been typical. He cannot walk or stand, but lies in bed in the position in which he may be placed, barely able to turn his body unassisted. He is now unable to articulate more than a word or two at a time. His flesh is fast wasting, swallows with difficulty, and is fed chiefly with liquid food. His dejections pass unconsciously in bed. But the expression of good feeling still lingers on his face and he never complains. When addressed he sometimes tries to reply and even to smile a recognition, but does not succeed and the semi-flaccid muscles of the mouth and face fail in their effort of movement. Bed-sores are hard to prevent. He will become even thinner than at present unless the drama ends by a paralysis of the muscles of deglutition. (Abstract, Stearns, Mental Diseases, p. 505.)

ILLUSTRATIVE CASE IN THE THIRD STAGE.

F. W., æt. 40, has had general paresis for two years and has passed through the first and second stages. He is so paralyzed that he cannot walk, stand steadily, or write; his mental state is that of a happy lethargy. When asked if he has much money, his facial muscles begin to

act in an incoördinated way, his eyelids half shutting, his mouth being drawn in, the lips moving spasmodically like a patient going into an epileptic fit, the whole effect being that of a contorted imitation of a smile, accompanied by a slow, prolonged and jerky "y-a-a-a," which is all that he can articulate for "yes." But he looks perfectly happy, and asks for, and complains of nothing. He is unable to retain urine and feces by night or day. All his food has to be liquid or minced, for he would bolt it in solid masses and choke; he is greedy for food when it is put into his mouth, though unable to feed himself. He had a congestive attack about the end of the first stage of the disease, accompanied by unconsciousness; a temperature of 103°, and general convulsions which began and ended on the right side, but affected the whole body in the middle of the attack; they lasted for about four hours and were succeeded by stupor, which lasted for forty-eight hours. He had retention of urine as he slowly recovered consciousness; after that, his speech and walking were more paretic, and his mental power more enfeebled. The second attack was of the same character, though less severe and occurred in the second stage. His common sensibility is so impaired that you can stick pins in him without his feeling it much. The reflex action of his cord is over-acute and extends upwards from the section of the cord irritated, for if you tickle the foot, they are both drawn up with a jerk, and the two hands and chest muscles are contracted likewise. The impression travels upwards more readily than downwards. (Abstract, Clouston, Mental Diseases, 4th ed., p. 385.)

GENERAL PARESIS FOLLOWING A GREAT MENTAL SHOCK. RAPID IMPROVEMENT. REMISSION AND RELAPSE. DEATH IN TWO YEARS FROM COMMENCEMENT OF ATTACK.

A solicitor, æt. 58, highly esteemed and in large practice, met with severe family affliction and reverses. Afterwards was altered in manner, committed many strange acts, indifferent to his troubles, disposed to quarrel, peevish. Undertook several large schemes at variance with his cau-

tious temperament. He would tell his confidences to people almost strangers. Conduct at home strange and excited; would not go to bed, said he was attacked by Fenians (an attempt recently made on the Queen greatly alarmed him). Accused a Mr. F. of being his enemy. Mr. F. was a Fenian. He had all his windows and doors barricaded; had a forced cordial manner, very garrulous. On admission, general appearance good, was said to have been four weeks ill, in elated spirits, talked much of his schemes, would cut a canal from the west of England to the mouth of the Severn, so that ships could go to Gloucester and Cheltenham; would build towns in the Cotswold Hills and a cathedral. He would try to improve agriculture and thus make a large fortune. Said Mr. F. was a great debauchee, his conversation interlarded with much prurient matter; easily diverted from one topic to another; open to slight flattery, bragged of his own cunning; was relieved to be admitted and in security against his foes; fancies he is in a cave in Leckhampton Hills (was admitted after dark); decorated himself with a blue scarf but when talked to quietly, was ashamed and removed it. The day after admission, found out where he was and pretended he was much pleased, praised all the appointments, said he would buy the institution, lost his fear of Fenians. Occupied himself in drawing the scheme for the cathedral. Said he should spend several millions, that the Queen would grant him an annuity of £10,000 and each of his daughters £5,000. His fear of enemies returned every evening. A fortnight after admission, sixth week after disease: He is always elated in spirits, jokes with the most insane patients and considers them perfectly rational. One month after admission: Same symptoms continue, grand ideas, etc., libidinous conversation, fears increase towards evening. Five weeks after, visited by wife and friends; at first refused to see them, then received them cordially; thought his wife had sided with Mr. F., but fears the latter less than formerly; he has a sense of weight in his limbs, eats largely. Eighth week: Spent a day at home; has lost his fears, converses rationally, expression much improved, says he feels well.

Ninth week: Left for six weeks on probation; relatives consider him well; has been quiet and rational; has slight feebleness of intellect, makes puerile remarks, a certain tameness in his conversation, heavy expression of face, is too much elated over his health, bulimia continues, feels no weight in his limbs. Fifteenth week: received me cordially, jokes about his former delusions, all he requires, he said, is his former strength. He was discharged "relieved." A note received shortly after from him, thanked me for care and attention, said his legs still felt weak. On his discharge, he remained at home, unable to return to business, his mind gradually declining, talked in a childish way, fond of prurient anecdotes, gradually neglected his personal appearance; was found one day sitting down on the curb-stone. Having been discharged in March he was readmitted in the following August and died in December, two years from the commencement of the attack. (Abstract, Sankey, Mental Diseases, p. 315.)

### PERIPHERAL NEURITIS IN THE COURSE OF GENERAL PARESIS.

The patient was an imbecile whose mother was insane. When aged 22, he began to have characteristic symptoms of general paresis. He had delusions of grandeur, stuttering speech, twitching of tongue and facial muscles; and pupils sluggish to light. After he had become confined to bed, there was paralysis of the peronei muscles, which disappeared after several months and was succeeded by spastic rigidity. (Abstract, Pick, Berliner klinische Wochenschrift, No. 47, 90.)

### GENERAL PARESIS DUE TO BUSINESS WORRY, INTERRUPTED BY A REMISSION AND MARKED IN THE LAST STAGE WITH CONVULSIONS.

Henry W., married, æt. 37, silver chaser, no insane relatives, the first attack due to business anxieties; first symptoms appeared two months before admission, when he bought a plot of land without being able to pay for it. He talked about travelling and taking a hundred friends

with him; was going to build a large house; become an M.P. and was full of extravagance and joyousness. On admission, he was sleeping, eating, digesting well, pupils contracted, with tremor and hesitation of speech, change in handwriting and restlessness. This attack passed away and in two months he was sent to the convalescent home, and was finally discharged, his friends being warned that it was only a remission. In six months he was brought back, having slept well till ten days before admission. He then became extravagant and did not know the value of money. He collected rubbish, thinking it gold, talked with much hesitation of speech, about millions and the hippopotami he was going to stock his farm with. Expression dull; tremor of lips and tongue; pupils small and equal; skin greasy; speech clipped and hesitating; memory bad; restless and mischievous, tearing books and clothes; no change in his optic discs. He improved in bodily health, fat and healthy looking. In a year's time he had a fit, the temperature not being raised and only slight convulsions, associated with unconsciousness. From time to time he had fits, always of the following nature: Without warning, fell forward on the floor, limbs twitching slightly, unconscious for from ten minutes to an hour, passing his urine and feces under him. Recovery was like one waking from sleep; each fit leaving him slightly weaker mentally. In six months more, vision was noticed to be weak, pupils contracted but not circular, right optic disc very white, edges very sharply defined; left optic disc pale, sharply defined; knee-jerk well marked. He said he was "very well." The fits recurred; but during the last month of his life he at times could talk accurately about events that happened two years before, in the hospital. In two years after admission he became unable to swallow, lost flesh rapidly and died. (Abstract, Savage on Insanity, p. 323.)

### GENERAL PARESIS, DURATION ABOUT TWO YEARS. DEATH IN THE THIRD STAGE.

A. S., a female, married, æt. 32, admitted in June; married twelve years; previously a domestic servant, of

excellent character; lived with her grandfather, a man very much respected; of short stature, of considerable personal attractions; had several children; her health failing, she returned to her grandfather, having been infected with syphilis by her husband; one or two of her children died. On the death of one, the patient's attack commenced, she being found insensible on the twenty-fourth of December. In June following she was arrested for pulling up trees in a nursery, threw her arms around two men on the street and kissed them; her house was the scene of drinking and other immoralities; her children neglected and dirty; her sister said the first appearance of the disease was shown by her ordering a large quantity of furniture. On admission very dirty, temperate, well-nourished, dark hair and irides, slight paresis about lips and face. Expression somewhat imbecile; is reported to have been six months ill on admission. Second day after admission, is excited and talkative, says God is very gracious; has a very nice husband, two children, is going to Margate, etc.; hesitates and drawls in her speech. Tongue protruded by an effort, not tremulous, coated. Says she has £17,000, that her husband has 40 and then 70 millions. She is feeble, at times, wet and dirty, disposed to undress, requiring the dress to be fastened mechanically. Sixth month after admission, twelfth of disease, complains of headache; eyelids swollen, and crying, is destructive and violent, articulation indistinct, hand tremulous, says she has "such beautiful sentiments." Tenth month, has not spoken for several weeks till to-day, imbecile and childish, voice tremulous and stammering, twitching of both lips, pupils nearly equal, peculiar gait, no grand ideas, is stouter, tongue clean, protruded well, is wet and dirty. A seton, inserted in the neck, caused no pain. Eleventh month, able to stand but very tottering, expression slightly improved, knew her mother, and glad to see her, speaks seldom, lies quietly in bed, conversed with her mother, right pupil large. Seton discharges well. Twelfth month, slight improvement, speaks more cheerfully, she can stand more firmly, walked without assistance to bath, takes food well, is well

nourished. Twelve and a half months, answers questions more alertly, says she feels well, can walk with the assistance of one person, right pupil dilated. Thirteenth month, when in bed began to lie with knees drawn up, cannot stand alone. Fourteenth month, knees constantly drawn up, is weaker and more restless. Fifteenth month, mind childish but not wandering, not excited, knows where she is, articulation hesitating, syllables slurred, tongue protruded well, wet and dirty, knees drawn up, says she cannot put the right knee down. Fifteen and a half months, is getting thinner, both knees contracted, visited by her mother, asked for her children, soon after forgot that her mother had been to see her, takes food well and swallows without difficulty, says, "I like food very much." Eighteenth month, continued confined to bed, gradually getting weaker, appetite still good, called for food at the proper hour, bowels acted regularly, continued to emaciate though she took food ravenously. Both legs contracted, said she was going to die, voice clear and stronger, but tremulous and bleating, sank and died without convulsion or other marked change. (Abstract, Sankey, *op. cit.*, p. 316.)

A CASE OF GENERAL PARESIS PROBABLY SYPHILITIC. MENTAL INTEGRITY VERY GOOD. DIED IN CONVULSIONS IN THE THIRD STAGE.

D. N., æt. 59. Probably a syphilitic; at any rate, a gonorrheal history. Excited and exalted; declared this to be heaven, and a few days later said he had been around the world in the last two days. Pupils small, immobile; tongue protrusion jerky; speech thick and interrupted. He said he had a letter about his wife and that she was dead—a delusion. Pains in right side followed by hemiplegia. Accessions and recessions of strength from day to day. For a general paralytic, he was very accurate in observing and reporting his symptoms. Hallucinations of sight and taste. Bed-sores on right buttock, blisters (trophic neurosis) running down right arm and wrist, later on left arm; then coma, convulsions and death. (Abstract, Campbell Clark, Mental Diseases, p. 222.)

## CHAPTER VII.

### VARIETIES OF GENERAL PARESIS.

In attempting to classify cases of general paresis, considerable difficulty is experienced at once. There seems to be no very clearly cut divisions at present, based either on therapeutics, pathology or clinical history into which these cases can be separated. The varieties are divided by Spitzka simply into two types; in the first of which the affection is the ordinary type; the second is that in which the mental symptoms appear after serious evidence of a spinal or axial affection of the nervous system, and hence this author terms this form the "ascending affection."

Savage divides the cases into acute and chronic and then into those in which the symptoms are primarily maniacal with exaltation of ideas; next the melancholic and hypochondriacal cases; and lastly those in which dementia is more or less pronounced from the onset. He states that it will be seen in tracing the history of cases that nearly all end in dementia sooner or later. In another division he considers whether the brain or cord symptoms are most marked, or come on earliest. In considering the latter, he divides the cases into those in which the posterior columns of the cord are most affected, and those in which the lateral columns are chiefly involved.

Folsom, in Pepper's System of Medicine, states that well-marked general paresis can be divided into four distinct types, as follows:

(1) The demented and paralytic; (2) the hypochondriacal; (3) with melancholia; (4) with exaltation and

mania. There are mixed cases in which some or all of these forms occur. Folsom also believes that the period of invasion or prodromal period, be it short or long, has, as a rule (not always), gone by when the disease has arrived at a point in its progress to be definitely placed in any of these four types.

B. Lewis[1] goes into the varieties of general paralysis in greater detail and produces a plan of clinical groupings in which he feels that all forms of general paralysis may be included; this scheme is based upon the predominance of the cerebral, bulbar or spinal symptoms, their early or late onset and the clinical course pursued.

*Group 1.*—Paralytic mydriasis; a partial reflex iridoplegia (light). Increased myotatic irritability. Excessive facial tremor and speech troubles. Great optimism with profound dementia.

*Group 2.*—Mydriasis with associated iridoplegia rapidly passing into the cycloplegic form—an early symptom. Frequent myotatic excess, but no contractures. Late speech troubles. Acute excitement with frequent convulsions. Very rapidly fatal course (preponderance of syphilitic history).

*Group 3.*—Spastic myosis; a complete reflex iridoplegia. Absent or greatly impaired knee-jerk. Failure of equilibration; locomotor ataxy, defective sensibility. Very defective articulation. Much optimism and excitement.

*Group 4.*—Late eye symptoms: paralytic mydriasis, a partial reflex iridoplegia (for light only). Ataxic paraplegia confined to lower extremities (arms do not participate). Great facial ataxy with extreme troubles of speech. Epileptiform seizures ushering in pronounced mental enfeeblement.

[1] Mental Diseases, 2d ed., p. 326.

*Group 5.*—No oculo-motor symptoms beyond occasional inequality. No contractures, but notable myotatic excess. No disturbance of equilibration, locomotion, or sensation. Speech troubles not pronounced. Epileptiform seizures very rare, but from the first progressive deepening dementia.

The French writers, according to Sankey,[1] divide the disease into four varieties as follows:

1. A congestive variety.
2. A paralytic variety.
3. A melancholic variety.
4. An expansive variety.

M. Baillarger insisted upon a hypochondriacal, a melancholic, a monomaniacal, and a simple form. It is therefore abundantly evident that the cases of general paresis show certain deviations in the course of the disease, but, nevertheless, Sankey believes that there will be found running through the whole of each case more or less pronounced general symptoms.

Every writer upon the disease admits that such variation, also, in the advent of the various phenomena, is not uncommon. As regards the order of occurrence of the mental and motor symptoms, for instance, Sankey[2] states that there are described three modes of invasion as possible.

Firstly, the case may commence by some disorder of the mental faculties — usually by delirium, or maniacal excitement—but in some cases with depression or melancholy, and on the subsidence of these symptoms the peculiar indications of general paresis, particularly those connected with the motor functions, manifest themselves. This is admitted by most authors to be the most frequent order of invasion. Both Parchappe and Calmeil agreed also that the

[1] Mental Diseases, p. 277.
[2] *Op. cit.*, p. 277.

special paretic symptoms may follow the mental at any length of time, as after many years, though this is exceptional and not the usual course.

Secondly, other cases occur, in which the mental symptoms, as mania, melancholia and especially a state of dementia, are manifested simultaneously with the lesion of motility.

Thirdly, MM. Baillarger and Lunier asserted that, as a rule, the lesion of motility precedes the mental phenomena.

Voisin, the well-known authority, has given five forms of general paresis:

1. Acute general paresis in which the course is rapid, the stages are confounded, and death occurs early as a rule. It may suddenly attack an apparently healthy person without any warning.

2. The common form of general paresis in which the mental state is generally expansive and ambitious. Often accompanied by epileptiform and apoplectiform attacks.

3. The form in which symptoms of dementia predominate (paralytic dementia). It is the chronic form par excellence, and is accompanied by few somatic troubles.

4. The senile form connected with atheroma of the arteries. In its course it is next in rapidity to form 1. It is very rare.

5. The spinal form in which the medullary troubles dominate the scene, and the intellectual are of secondary importance. It is very irregular in its manifestations. (Shaw, Epitome Mental Diseases, p. 77.)

Another division of general paresis is into four forms, three of which depend on the character of the mental symptoms, and the fourth on their absence or significance: (1) the expansive form; (2) the depressive or melancholy form; (3) the demented form; (4) the somatic form (Shaw).

Mickle, in his classic work, has laid down five groups into which general paresis can be divided. The first group consists of cases of a common kind, which exhibit exalted delusions, maniacal excitement and hallucinations. The duration of this condition is short; cerebral hyperemia and softening are observed with adhesion and decortication. In the second group there is found a protracted stage of dementia, the quiet self-satisfaction of the early stage being followed by peevishness or apprehension, till the personal habits become foul and brutish. The duration of this condition is lengthy, and the brain seen to be atrophied with considerable increase of intracranial serum. The gyri of the upper surface and frontal region are wasted, adhesion and decortication are moderate, and the white substance is pale. In the third group dementia is early and predominant, and melancholic delusions are common, the latter course of the disease being one of extreme dementia. Hemiplegia is conspicuous and common, epileptiform attacks being very frequent. The duration of this condition is brief and on autopsy the left hemisphere is found more diseased than the right and more or less atrophied. In the fourth group the morbid lesions are much more conspicuous in the right than in the left hemisphere. The outbreak begins with active delirium and maniacal agitation, the symptoms of dementia and melancholia noticeable in the third group being wanting. The duration is somewhat lengthy. The fifth group is not well defined. There is much local induration of the cortex and the interstitial changes tend to sclerosis; the mental symptoms are various; epileptiform fits, hemiplegia, and spasms are frequent and the duration somewhat long. (Blandford on Insanity, p. 311.)

Mickle also recognizes eight mental varieties in the

first stage of general paralysis. These are: (1) Symptoms of dementia predominant, in which are found every degree of mental failure and deficiency. (2) Expansive delirium is predominant. Here grandiose ideas and a feeling of elation or quiet self-satisfaction are actively shown. (3) Mental excitement is predominant, with probably, though not necessarily, exaltation and grandiose ideas. There may be excitement, mental and motor, or merely silent restiveness, or what is described as the galloping form of general paralysis—raving, violent, sleepless, with typhoid-like symptoms. (4) Hypochondriac symptoms are prominent. In such cases the essential mental state may be hypochondria, with delusions as to the viscera, and especially regarding the liver and bowels. According to Mickle, this form is next in frequence to the expansive: according to Clark's experience the first class, the early demented, are more prevalent than the hypochondriacal. (5) Melancholic symptoms prominent. (6) Persecutory delusions prominent. (7) Stuporose form. (8) Circular form. (Abstract, Campbell Clark, Mental Diseases, p. 207.)

According to a few writers there is no division as satisfactory as that of "Meynert's Eight," which is as follows:

1. Simple progressive dementia with the usual motor impairment which accompanies it, but excepting hypochondrical depression, not necessarily exhibiting other mental symptoms than dementia.

2. With the expansive delusions and the distinctive motor disturbances which appear simultaneously and are progressive, constituting the "classic" form of general paralysis. The mental state is usually of self-satisfaction and exultation, but there maybe depression.

3. Of the same type as the last, but failing its steadily progressive character through arrest of the

active process. The remissions, which seldom last so long as a year, raise hopes of recovery, but still manifest unmistakable impairment of the reasoning faculties. The psychic disturbances are much greater than can be accounted for by the atrophy of the brain alone.

4. Cases in which the characteristic exaltation and grand delusions reach such an astounding height that manifest motor symptoms are looked for with confidence from day to day and yet may not appear even for a year, any slight incoördination naturally being obscured by the general muscular disturbance. Meanwhile there may be such an improvement that the patient leaves the hospital for awhile, once, rarely twice, on the responsibility of his family, but to return with marked motor, as well as mental, signs.

5. A very rare form, with alternate symptoms of exaltation and depression of the type of circular insanity.

6. With early furious delirium, painful hallucinations, confusion and incoherence somewhat resembling acute delirium.

7. Progressive general paralysis, in which the characteristic indications appear secondary to other forms of insanity; for instance, after paranoia or melancholia, first described by Hoestermann.

8. The combined form with sclerosis in the whole cerebro-spinal tract, the symptoms of tabes or spastic paralysis predominating, according as the posterior or lateral columns of the spinal cord are chiefly involved. The ascending type, in which the cord is first affected, is rare. Optic neuritis ending in atrophy and paralysis, especially of the ocular muscles, may precede marked mental symptoms. (Folsom per Hughes, Practice of Medicine, p. 472.)

It is beyond the scope of this work, addressed as it is to the medical student and general practitioner, to do

more with these elaborate classifications than to enumerate them. But there are a few special forms included in these classifications which are usually described by writers that may appropriately find mention at this point.

**The Galloping Form.**—As the name suggests, the galloping form acts in such a rapid and violent manner that within a few months, or it may be but weeks, all resistance to the disease is overcome, and death follows after this brief time. It usually assumes a grave aspect from the first, and in some cases maniacal outbreaks occur, from the earliest stage of the disease. Many times early exhaustion supervenes, then partial collapse and lowered temperature are speedily followed by death. These cases are similar to those of acute delirium, and with these are often confused.

Berkley speaks of one case in which slight irritability and alteration of disposition was followed within two weeks by excitement, in the highest degree, with delirium and fever, the malady running its course in five weeks. The same author records another case, who recovered from this attack of seeming acute delirium and was still living after four years, but much demented and showed the characteristic pupils and increase of knee-jerk.

Zacher reports two cases of acutely progressive paresis, the first, after a melancholic prodromal state, ran its course in less than four weeks; the second, lasted for two and a half months.

### A CASE OF RAPID GENERAL PARESIS AND ATAXY DEVELOPING TOGETHER.

Thomas J. B., married, æt. 51, clerk, no insane relatives; first attack of insanity; supposed to depend on intemperance, although he had been temperate for the last two years. A

slight attack of depression, lasting one week, occurred when he became teetotal. He has had two severe falls, with no symptoms of local head injury. The first symptoms of this attack occurred three weeks before admission, when he became strange in manner; unable to attend to his business; sleepless, with exaltation of ideas; believing himself a great man; able to compose poetry and paint pictures, at least, fit for the academy. He said his father was the son of a nobleman; was restless, boastful and encroaching; constantly moving about, willing to race or fight with the patients. His pupils were small but equal; memory for recent events bad; walk unsteady, legs being thrown away from the body and falling on the heels; patellar reflexes absent, says he can't feel the ground; falls on closing eyes; slight tremor of lips and hesitation of speech. He continued happy and contented with his powers, making many pictures and filling reams of paper. In about a month he had divergence of eyes; marked cerebral giddiness when left eye was closed; no evident changes visible in his discs. Since then bodily and mental weakness progressed rapidly. (Abstract, Savage on Insanity, p. 318.)

### A CASE OF GALLOPING GENERAL PARESIS.

A man of 40, who had always been healthy, was taken ill and in a few weeks developed a typical case of general paresis with well-marked expansive ideas and delusions of grandeur and power. He was removed to the asylum and died there in ten days from a series of convulsive seizures which numbered ninety-nine in twenty-four hours. (Abstract, Jelliffe, Allgem. Zeitschreift für Psych., 55, 99·5·)

### GENERAL PARESIS OF THE GALLOPING TYPE.

Louis F. G., married, æt. 50; artist, no history of insanity in the family; and no previous attack of insanity. He had suffered from pleurisy with delirium two years before; steady in his habits; cheerful and intelligent. Two months before admission he was irritable, nervous and depressed; he lost his artistic power and forgot to complete his

orders. Went from London to Paris and was unconscious of the difference between the cities. When he returned his bodily health was seen to be failing; sleepless, poor appetite, difficulty in swallowing. He was clean in his habits; had no extravagant ideas. He could not recognize himself in the glass, was suspicious, violent and obstinate about his food. The diagnosis was general paralysis in an early stage. Within two weeks he was so weak as to have to be kept in bed; bed-sores developed and he died in six weeks. (Abstract, Savage, *op. cit.*, p. 297.)

**The Double Form.**—The circular type of paresis, or the double form, occurs in some cases, and most frequently where there is a history of heredity. This does not refer to the mental fluctuations after seizures, or to ordinary variability and emotional disturbances, but it is a distinct type, which characterizes a certain group of cases.

The phases of the disease, in these cases, differ so widely as sometimes to cause the physician to doubt the diagnosis. The characteristic symptoms of elation, either with or without an intermediate period of calm, may pass into a phase of depression, accompanied at times by delusions of melancholia, even with suicidal tendencies, and sometimes with ideas of persecution. This may be followed by a fresh outbreak of excitement with violence, or exaltation and expansive delirium; and this, again, be succeeded by melancholia.

The phase of depression has been known to continue for months, in this way prolonging the life of the patient, for the periods of excitement, naturally, reduce more quickly the strength of the system.

GENERAL PARESIS OF THE DOUBLE FORM.

In a patient, exalted mania followed an attack of depression, resembling circular insanity, but instead of the melancholy returning, difficulty in articulation and epilepti-

form attacks supervened and he is now in last stage of the disease. (Abstract, Blandford on Insanity, p. 306.)

### GENERAL PARESIS OF THE DOUBLE FORM.

Herbert F., single, æt. 42, accountant, no insane relatives, first attack of insanity, no cause known. When admitted the symptoms had existed about six weeks. They began with nervousness and twitching, followed by depression and threats of suicide, but were soon replaced by great exaltation and extravagance. He believed himself rich and powerful and offered marriage to several ladies; tongue tremulous, pupils equal; hallucinations of hearing; memory weak, sleeps well; excessive patellar reflexes; writing shaky. Five weeks after admission, both legs swelled and unhealthy-looking pustules formed. In two months he was variable, weaker in mind and emotional. In three months more he was melancholic and said he had offended God, but again became violent and emotional. In a year after admission he was quiet, no exaltation, looked like one suffering from melancholia with stupor; circulation feeble, hands livid and congested. A little loss of expression, less tremor of tongue and hesitation of speech, yet he was wet and dirty. If seen for the first time now, he would hardly be recognized as a general paralytic. (Abstract, Savage, *op. cit.*, p. 326.)

### GENERAL PARESIS IN WHICH PARETIC SYMPTOMS ALTERNATE WITH IDEAS OF PERSECUTION.

A hereditary degenerative patient was attacked by general paralysis. At about the same period manifested ideas of persecution, and attempted suicide. On admission in the following year he presented classical signs of general paralysis, also ideas of persecution and hallucinations of hearing. The symptoms of meningo-encephalitis disappeared, while delusions of suspicion increased. Psychomotor hallucinatory delusions of general and genital sensibility were added and he attacked his "persecutors" with deliberate violence. Two years later he had two epileptiform attacks and signs of general paralysis reappeared in

a more serious form, delusions of persecution vanished. Again the paralytic symptoms retrogressed and the delusions revived. In three years more his mental faculties had declined in vigor and the persecutory insanity had progressively lost in activity and cohesion. (Magnon, Journal of Mental Science, Vol. 53, p. 381.)

GENERAL PARESIS OF THE ALTERNATING FORM.

J. B., a country laborer, with a history of alcoholic excess and hereditary taint. On admission he was melancholy, not inclined to conversation or to answer questions. He had the delusion that no one would employ him and was so miserable that he secluded himself and would not go out of doors. He feared that something was going to happen to himself and family and refused food. His pulse was 120, with no physical symptoms to account for it; no nervous phenomena; pupils natural in size and outline, but sluggish; tongue protruded a little to the right side; his general condition, pallor, want of muscular tone and anemia. A curious fact was that his despondency came on towards evening and had disappeared by morning. He did not sleep well, was fidgety, restless and would not keep in bed. He was sent to work in the garden, became more cheerful, less restless and appeared convalescent, but two weeks later was nervous, frightened and tried to get out of the window at night. Nervous twitchings were now observed around eyelids and mouth; his voice, at first melancholic, was now emotional and tremulous; he was facile, easily diverted from one subject to another, but peculiarly sensitive in his feelings. Later the depression disappeared, he showed temper and impatience; he was now reported as gaining strength, and improved in his mental condition, but twitching around eyes and mouth was still present. He was discharged much improved and again admitted in three months. He is now decidedly paretic, soon gets tired in walking and staggers; his words are interrupted; there is a quivering of the lower lip, even when the mouth is closed. Pupils normal, except that they remained dilated for two or three months. He is now

violent and abusive. (Abstract, Campbell Clark, Mental Diseases, p. 217.)

**General Paresis of the Melancholic Form.**—One of the types of general paresis, first described by Baillarger, is that with symptoms of melancholia and hypochondria. In the place of the symptoms of elation in the first stage, there is a feeling of anxiety and foreboding. In these cases it is more than a passing feeling of depression of spirits, which is so frequent in the prodromal stage. The symptoms are so like those of a true melancholia that the history presented by the friends of the patient must greatly influence the diagnosis, until such time as a congestive attack, or some somatic sign, occurs to give assurance as to the nature of the malady. After a time, in some cases, the ordinary course of the disease is followed, in others the symptoms of mental depression persist to the end.

The hypochondriacal form of the disease is marked by headache, defective circulation, vaso-motor disturbances and various abnormal sensations, referred chiefly to the internal organs. Associated therewith are the mental conditions of despondency, languor, inattention and distress about unimportant matters. Actual pain in the epigastric region may be complained of for some time, indicating, as some believe, an involvement of the great sympathetic nerve. Hallucinations and illusions of a disagreeable character are sometimes added to the other symptoms.

Clouston believes that almost all of these patients suffer from some organic visceral disease, or functional disturbance, which transmits sensations that are disagreeable and depressing. In examining his pathological register, he found that nearly all of his cases of general paresis who had had tubercular disease had been melancholic.

A CASE OF THE MELANCHOLIC FORM WITH TUBERCULAR DISEASE.

G. K., a man, had the fixed melancholic delusion that a man was inside of him, who annoyed him constantly and thus made him depressed. Death showed tubercular disease of the intestines. (Abstract, Clouston, Mental Diseases, p. 400.)

A CASE OF THE MELANCHOLIC FORM WITH BRONCHITIS.

A cabman who was very happy in the supposed possession of thousands of pounds suddenly became melancholic, declared himself a beggar and cried bitterly. Upon examination he was found to be suffering from bronchitis. Reflex action was so dulled that he had no cough and felt no pain. As he improved his delusions of grandeur returned; upon relapse the melancholy state at once came back, but at last he recovered from the bronchitis and was again the happy possessor of his thousands (Clouston). The author adds: "Whenever I see a general paretic dull, now I always search for an organic visceral cause and usually find it."

GENERAL PARESIS OF THE MELANCHOLIC FORM.

The patient never presented symptoms of excitement or exhilaration before admission, and since then the mental state has been one of depression; he sees people at night climbing into the window or door of his room; they are his enemies and try to take pictures of him. At other times, they pound his feet black and blue and, in evidence, he begs you to examine them for yourself. At other times, he hears them shouting to him to come out and defend himself if he can. He believes they are the attendants, who disguise themselves at night, and says he would kill them if he could, and, in fact, he tries to whenever he gets a chance. He had an epileptoid seizure soon after admission and was in a partial hemiplegic condition for nearly three weeks. (Abstract, Stearns, Mental Diseases, p. 484.)

A CASE OF GENERAL PARESIS OF THE MELANCHOLIC TYPE.

John C., married, aged 47, merchant; no insane relatives. First attack of insanity, which had lasted six weeks, caused by loss of money, and anxiety, and began with the loss of identity. He refused to take food because he believed he could not afford it, and because he thought people were trying to poison him; after admission, he was reported as silent and obstinate, refusing his food, negligent of his person and sleepless; he had to be fed artificially; and he had a convulsive seizure in the early part of his illness. He slowly lost strength, but remained perverse and melancholy. The cause of his physical deterioration and of the difficulty in breathing which came on, was unknown. Died in about three months. (Abstract, Savage, *op. cit.*, p. 314.)

AN ODD CAPRICE IN A MELANCHOLIC PARETIC.

A patient, prevented from suicide by his wife, drew diagrams of his tombstone, whose inscription recited all his achievements, and sang the praises of his wife for saving the life of so valuable a citizen. (Abstract, Spitzka on Insanity, p. 199.)

A PECULIAR DELUSION OF ONIONS AND SARDINES, IN THE HYPOCHONDRIACAL TYPE.

A patient who could not eat or digest, and who had not a penny, according to his statements made during the hypochondriacal period, awoke one morning with the project to get up a monopoly of the entire sardine and Bermuda onion trade in the world, and having, as he alleged, secured it, proposed to eat all the sardines and onions himself. (Abstract, Spitzka, *op. cit.*, p. 200.)

A CASE OF GENERAL PARESIS OF THE MELANCHOLIC TYPE.

One patient who had many of the commonest delusions of melancholia, thought he was going to be arrested, that people were going to injure him, that they were malign-

ing and going to rob him. Yet he was not melancholic as other men were. He never refused his food, but was very fond of it, and very particular as to what he ate. He had a good opinion of himself, very vain of his personal appearance, and, with all his melancholy ideas, was often quite cheerful and chatty. His mind was dull, lethargic and void of excitement during the whole illness. (Abstract, Blandford, *op. cit.*, p. 289.)

**Spinal General Paresis.**—There are several groups of cases termed the spinal varieties of the disease, in which there are various implications of the cord. Only to a limited degree should they be looked upon as ascending and descending systemic affections, but rather as general diffuse affections depending upon the involvement of the whole nervous system. It is not strange, therefore, when we consider that the process of degeneration is one affecting the entire nervous tissues that in a certain proportion of the cases the form of the disease should be first manifested in some portion of the spinal cord.

Bevan Lewis[1] has divided the cases of general paresis as they relate to the cord into three varieties: (1) In a majority of the cases, as the only evidence of spinal implication, we find diminished cutaneous sensibility and sluggish knee-jerk, alternating at a later period with increased knee-jerk, usually as the direct sequel to a congestive seizure. Later in the disease paretic symptoms may preponderate, but the cerebral implication throughout is always the more emphasized. (2) The tabetic group, with most of the symptoms of tabes dorsalis. Yet we usually witness complete subsidence of the special spinal symptoms when the full development of the cerebral symptoms is established; or what is not infrequent the anesthesia and ataxy may even be

[1] *Op. cit.*, p. 556.

SPINAL FORM OF GENERAL PARESIS.

replaced by spastic paraplegia. (3) The group of spastic cases in which symmetrical descending sclerosis of the lateral columns is early apparent and continuous; usually as the sequel of convulsive seizures and especially frequent in those subjects who have been addicted to alcoholic excess.

The best observers have invariably failed to find that the great Wallerian law of degeneration applies to the pathological reductions of general paresis.[1]

IMPLICATION OF THE LATERAL COLUMNS.

Francis R., single, aged 30, medical student, no history of insanity, first attack, lasting six months; said to have followed excesses and to have had former attack of syphilis. The first symptoms were, change in disposition, oddness in behavior and absence of mind. He had always been vain about his appearance and powers and this developed into extreme exaltation; he thought himself a perfect paragon, although he had not passed even his preliminary examination. On admission he was of medium height, squarely built, with bright malar capillary congestion, his walk jerky, patellar reflexes exaggerated, pupils unequal, the right one larger, both reacting to accommodation, but slightly only to light. For twelve months he slowly developed weak-mindedness, great hesitation in speech, extreme facial and lingual tremor, a nervously irritable appearance; no control over bladder and rectum; indifferent to

[1] One of the earlier views of paretic dementia, when it was the termination clinically of posterior sclerosis, was that the degenerative conditions in the spinal cord continued through the motor tracts all the way to the cerebrum and to the cerebral cortex. This is certainly not the correct view. A number of years ago I had for several years a case of posterior sclerosis under my care in private practice. The patient became paretic and went to the Pennsylvania Hospital for the Insane, and subsequently to Danville, where he died. The body was sent to Philadelphia, and a post-mortem was made, and twenty or thirty sections from the cord, and all the way to the cortex, were examined under the microscope. Similar cases have been recorded. The disease perhaps ascends so far as the cord is concerned; but the cerebral condition is only a localized expression of a general condition. The disease does not usually extend anteriorly beyond the oblongata and pons. (Mills, C. K., Nervous and Mental Diseases, Vol. 18, p. 85.)

his surroundings, neither reading nor associating. One year after admission he was unable to walk alone, could not articulate a single word, very wet and dirty, legs becoming contracted. He died in about three years after onset of disease. (Abstract, Savage, *op. cit.*, p. 319.)

### GENERAL PARESIS WITH LATERAL SCLEROSIS IN A WOMAN.

Edith C., married, æt. 35, printer's wife, no history of insanity, first attack, of six weeks' duration, had no children. When admitted the first symptoms were accusations against her husband. She became incoherent and restless, wandering about in her night-dress, saying her husband wanted to poison her; she was excited, had exalted ideas about riches; thought there was chloroform in her husband's brain, that he was mad; that she was a duchess. On admission she had hallucinations of taste, pupils small but equal, slept badly, walk shaky, reflexes greatly exaggerated, no change in optic discs. After admission, she steadily got more feeble in gait, more tremulous in speech, with difficulty in swallowing, and loss of power over rectum and bladder. In about two months she had an epileptiform attack with general convulsions, but the symptoms were most marked on right side; she lost power and sank. (Abstract, Savage, *op. cit.*, p. 320.)

### IMPLICATION OF POSTERIOR COLUMNS. GENERAL PARESIS PRECEDED BY LOCOMOTOR ATAXIA.

G. A., a man of 50, who had had locomotor ataxia for seven years, began to be maniacal, sleepless, and to have delusions of grandeur. Imagined he was an earl with millions; wrote fifty letters a day, ordering everything imaginable; and invited the Queen to dinner. His speech was affected by the characteristic tremble of the lips, the shuffle and thickness in the articulation of long words and sentences. He passed through the second and third stages of the disease and died in eighteen months from the time of the beginning of the mental symptoms. (Abstract, Clouston, *op. cit.*, p. 389.)

### GENERAL PARESIS FOLLOWING LOCOMOTOR ATAXIA.

A chaplain in a Welsh prison had locomotor ataxia of very marked and progressive character. He kept his appointment in the prison for several years. After ten years, he showed signs of exaltation. These became progressive, he began to run down rapidly, went into general paralysis and died eighteen months after the latter symptoms developed. (Abstract, Down, Transactions of Ninth International Medical Congress, Vol. 5, p. 405.)

### GENERAL PARESIS FOLLOWING LOCOMOTOR ATAXIA.

A patient having locomotor ataxia finally showed mental symptoms in the form of excitement and delusions of grandeur. No mental symptoms had appeared until a year after the motor symptoms, but there had been mental weakness for some time prior to the appearance of the more pronounced mental symptoms. (Abstract, Stearns, *op. cit.*, p. 513.)

### GENERAL PARESIS OF THE TABETIC FORM.

C. B., æt. 39, married, soldier, father was insane for three months. History of present attack: Unsettled, and could not fix attention on his work, did stupid things in the house; although wife and children were starving, spent what money he had in useless articles and gave large orders for things for which he could not pay. On admission, imagined he was very wealthy. He was restless,

FIG. 1.

STATION IN TABETIC FORM OF GENERAL PARESIS.

Showing tendency to over-extension of the knee-joint; needing aid of both sight and support to maintain balance.

talkative and excited; he could not sleep at night, owing to imaginary insects annoying him (hallucination of touch). His left pupil larger than right, both reacting to light; tongue tremulous; sensation normal; reflexes not impaired; special senses healthy. Progress of case: Exaltation well marked, says he is a magnificent writer, while in reality he can barely write his own name. There is considerable mental enfeeblement, articulation correct, tongue tremulous; left pupil sometimes larger and sometimes smaller than the right; outline sometimes irregular. There are tabic symptoms. Standing with feet together and eyes shut, he sways about and tends to fall. A year after admission: Mild exaltation, showing itself in contented expression, and not in well-marked delusions; no excitement or depression. Enfeeblement is well marked, seen in being easily controlled, in want of self-assertion, in absence of mental vigor; memory is impaired, especially for names of places.

The symptoms of locomotor ataxia are well marked. With his eyes open, has difficulty in walking and cannot stand unsupported; his lower limbs little better than artificial limbs; coördination of arms and hands not impaired. Sensation to pain and touch impaired in lower extremities, much less so in upper; plantar reflex impaired, tendon reflex abolished, right pupil larger than left, contract to accommodation but not to light. (Abstract, Campbell Clark, *op. cit.*, p. 219.)

### A CASE OF GENERAL PARESIS FOLLOWING LOCOMOTOR ATAXIA OF SYPHILITIC ORIGIN.

Alfred S., single, 45; no neurotic history; syphilis sixteen years ago, but no serious secondary troubles. Six years ago locomotor ataxy developed and was treated. Symptoms of mental disorder have appeared during the past week. He had been exposed to wet and cold a good deal recently. He became excitable and irritable and sleepless and noisy at night. He wrote endless letters, tore up books; was going to reform the world, to suppress the House of Commons, to blow up everything with dyna-

mite. He has had hallucinations of hearing for a month, and shooting pains in his legs. He had frequent erections and emissions; pupils at times equal, small at others, the left larger. Six years ago he had convergence and diplopia, cured by the use of mercury; general and color vision normal; pupils reacting both to light and accommodation; patellar reflexes absent; walk ataxic. On admission, he had all the most marked symptoms of ataxia and of general paralysis of the insane and no treatment seemed in any way to affect him. (Abstract, Savage, Transactions of Ninth International Medical Congress, Vol. 5, p. 939.)

TWO JUVENILE CASES IN WHICH THE FIRST MANIFESTATIONS OF THE DISEASE WERE IN THE CORD.

Female, æt. 23, ill two years, in a helpless condition, unable to walk or stand up, with violent tremors, marked affection of speech, inequality of pupils and Argyll-Robertson phenomenon, demented, loss of control of bladder and rectum, marked general anesthesia and slow reflexes, suggesting medullary lesion. Also a youth, aged 19, ill on and off for four years, finally went under Charcot with paraplegia, leading to a diagnosis of "organic lesion of cord." Under ergot and actual cautery, the paraplegia disappeared, but later there was anesthesia of the face and arms. Then, rapidly appeared, weakness of legs, emaciation, affection of speech, tremor of lips, unequal and inactive pupils, wet and dirty habits, etc., and early death with post-mortem evidence of general paralysis (Joffroy).

## CHAPTER VIII.

### VARIETIES (*continued*).

**General Paresis with Simple Progressive Dementia.**—Some cases exhibit simple weak-mindedness throughout the whole course of the disease, without any intermediate stages of excitement or depression. This may follow in cases beginning with convulsions, or it may develop without any appreciable cause. There is considerable variation in the manifestations. It may show itself in simple loss of memory, in an inability on the part of the patient to adjust himself to his surroundings, or in a childish or emotional disturbance. Some cases are querulous or nervous, others are boyishly frolicsome. The physical symptoms take the usual course.

GENERAL PARESIS OF THE DEMENTED TYPE.

G. C., æt. 50, a quiet-living man. First showed irresolution, want of keen interest, and forgetfulness; he could not realize necessity for working in order to live, and became irritable when pressed to work. Then his mind showed clear signs of enfeeblement and facility. He would believe silly stories; could not converse connectedly, had few likes or dislikes. His speech was thick, and lips quivered when he began to speak. His walk was not firm; in trying to turn around sharply he did so uncertainly, and could not walk on a chalk line, or stand steadily on one leg. Nearly all his symptoms are negative. He had a gentle kleptomania; he would automatically fill his pockets with acorns, rags, etc., and did not seem to care when they were taken from him. He died in six years of pure exhaustion, absolutely paralyzed, not having made an articulate sound for a year, and not having voluntarily

used a voluntary muscle, lying on a water bed and leading a merely vegetative life. Such cases are apt to live a long time; they are not usually caused by a dissipated or excited life, and are of a calm, phlegmatic temperament. (Abstract, Clouston, Mental Diseases, p. 391.)

A CASE OF GENERAL PARESIS OF THE DEMENTED TYPE WITH EPILEPTIFORM CONVULSIONS.

A traveling salesman was regarded in good health, untii his return home on one occasion, when he appeared dazed and unable to give an account of himself, except that he had been robbed in a sleeping car in New York. It was then found that he could not tell an occurrence ten minutes after it was past. On admission, he was good-natured, facile and satisfied. He did not mind remaining as long as we should choose, though he left a sick wife and little daughter dependent on friends for support. No impairment of gait; never had been excited, was eminently quiet, good-natured and satisfied. He had epileptiform convulsions, defective articulation, placid expression of face, impaired memory and weakening mind and entire satisfaction; muscular twitching of face and tongue, but hands and legs were firm and he walked without difficulty. He had a convulsion once a month and finally died from the effects of one, having never been excited, depressed or emotional. (Abstract, Stearns, Mental Diseases, p. 489.)

A CASE OF GENERAL PARESIS OF THE DEMENTED TYPE WITH HEMIPLEGIA.

W. B., aged 32, father has had apoplexy; patient had left hemiplegia of which a faint trace remains in the left leg; fairly good personal history. The attack of hemiplegia came on when he was at work in a coal pit, but he was able to walk home though his leg was somewhat stiff. His speech became slow and thick; he became weak and childish, this mental change being noticed before the onset of the hemiplegia. The pupils were at an early stage unequal and the reactions impaired. There is slight facial deficiency, tremor of tongue, slight tremor of lips and

he exhibits other nervous symptoms of general paralysis. This is a very slow case, childish contentment, no real exaltation. (Abstract, Campbell Clark, Mental Diseases, p. 220.)

A CASE OF GENERAL PARESIS OF THE DEMENTED TYPE OF SYPHILITIC ORIGIN.

Patient male; æt. 45; tailor. Family history negative; syphilis. Patient first noticed some weakness in his left hand, which gradually developed into a paresis, so that he could not carry on his work. Paresis gradually showed itself in his left leg. Examination shows left hemiplegia, with marked intention tremor, with paralysis agitans of left hand; reflexes exceedingly exaggerated; expressionless face; fine tremor of face and tongue; speech, slow and clumsy, with inability to pronounce "truly rural," etc.; no delusions of grandeur, etc., but some slight dementia and contentment with his condition. (Fisher, E. D., Journal of Nervous and Mental Diseases, Vol. 18, p. 825.)

A CASE OF GENERAL PARESIS WITH SIMPLE PROGRESSIVE DEMENTIA.

E. M., married, æt. 46, merchant, no insane relatives, mother died paralyzed, one brother died of apoplexy. This was the first attack; cause, great money losses and anxiety about his family. He had been temperate and hard-working; he had a convulsive seizure two and a half years before he was considered insane. The present illness began with incoherence and confusion of thought and speech; he was unable to enter into rational conversation, and had a vacant expression of face. On admission, he was stout and expressionless, with feeble power of reaction and negligent of his personal appearance; optic discs greatly atrophied; reflexes exaggerated; and nearly all the muscles, both of face and limbs, unduly irritable to the electric current. He improved bodily, gaining fourteen pounds in seven months but mentally became weaker; right pupil large, and reacted to accommodation but not to light;

great tremor of facial muscles and hesitation in speech. Athough gradually getting weaker in mind, at times he brightened up, and could recognize relatives and understand his position as a patient in an asylum. Such periods are often followed by convulsions or exaggeration of mental weakness. In two and a half years he had become very thin, and there was contraction of his legs and he was unconscious most of the time. At the end of another month he had a series of severe epileptiform fits and died. (Abstract, Savage on Insanity, p. 312.)

**Juvenile General Paresis.**—General paresis in early life, *i. e.*, under the age of twenty, is very rare and no cases of it are to be found in medical writings, until within very recent years. Most of the cases have been reported by English and German observers, although a few are to be found in French and Russian literature. This form of the disease has been variously termed developmental, premature, early, precocious, and juvenile general paresis.

Clouston[1] gives an account of two girls placed under his care in 1890. He says that in both, the first symptoms of the disease had been manifest at fifteen years of age, and that both followed the usual course till they died, one at seventeen, the other at twenty. Both were undeveloped in form and appearance, neither had ever menstruated, and both suffered

[1] As regards the occurrence of general paralysis at this period of life of which Dr. Wiglesworth speaks (puberty), I admit I was extremely skeptical of the first case. One's whole ideas of general paralysis were contrary to its occurrence taking place at this early period of life. I, along with Dr. Maudsley, had attached very great importance to sexual excess in the causation of general paralysis; and here we had cases where undoubtedly there had been nothing of the kind in any shape or form. Then it seemed extraordinary that every other possible cause of general paralysis was absent, in these particular cases. On the whole it had the effect on my mind of almost revolutionizing my ideas of general paralysis. To begin with there were great doubts expressed as to whether they were cases of general paralysis or not; but I think the evidence is so striking, and in Dr. Wiglesworth's paper it is of so conclusive a nature that such cases will not be questioned in the future. (Clouston, Journal of Mental Science, 1893.)

from hereditary neuroses, and hereditary syphilis. The pathological appearances found in the brains of both, together with the symptoms during life, left no doubt as to the nature of the disease.

In almost all cases there are premonitory symptoms in a change of disposition, a loss of interest in surroundings, diminished energy, morbid sensitiveness or some other mental change marking a weakened nervous energizing. Delusions of grandeur are seldom present, and far the larger number affected are girls.

The disease occurs as one of the groups of the neuroses of development, and subjects are usually possessed of a family history of neuroses, insanity and frequently syphilis.

A CASE OF GENERAL PARESIS OF THE JUVENILE TYPE.

A female child, æt. 13, ten months ago became dull in mind. During the course of the case she had several falls and hurt herself, but it was noticed that she was dull before she had the falls; she was the fifth child of her parents; the four previous children are alive and healthy. Subsequently to the patient's birth, two pregnancies ended respectively in a still-birth and miscarriage. When seen, she presented typical physical signs of general paresis. Her father died with paralytic symptoms attributed to syphilis and the mother died a year later with similar symptoms. The patient was not conscious of being ill; she said she was always happy. (Abstract, Norman, Journal of Mental Science, Vol. 39, p. 307.)

A CASE OF GENERAL PARESIS IN THE ADOLESCENT PERIOD.

J. McC., æt. 19, both parents very intemperate; patient naturally weak-minded, but had been to school; fifteen months before admission he had a fall on his head and lay unconscious for four days in convulsions; was said never to have fully recovered his mind after this. On admission he was in a condition of advanced dementia. He could not

JUVENILE GENERAL PARESIS.

A case of the Juvenile Form recently under observation for a time at the Philadelphia Hospital. The patient was taken from the Institution and afterwards disappeared from view. From a photograph kindly loaned.

answer a single question rationally; excited and noisy; muttering an incoherent jargon; wet and dirty. Died in six months. (Abstract, Wiglesworth, Journal of Mental Science, Vol. 39, p. 357.)

A CASE OF GENERAL PARESIS OF THE JUVENILE TYPE.

M. E. M., girl, æt. 15, parents healthy and temperate, father aged 50, mother 42, had been married eighteen years. The patient was the second child in the family; she was one of three survivors out of thirteen pregnancies, and of the eight female pregnancies patient was the only survivor. Two of the others were miscarriages, two were still-born, one died, aged two weeks, and the other two died of scarlatina. Of the five male pregnancies, one died, aged five weeks, in a fit, one aged two of some unknown cause, another aged two and a half years of scarlatina. There was no other evidence of syphilis, but the above suggests it. No history of nervous disease in the family. Patient was bright until eleven years old, when she fell, striking her head; unconscious for two hours and in bed with headache for several days. Some months after, she developed weakness of the limbs. A year after accident she was noted to be getting dull, losing her memory, and from that time on her mind gradually faded away. During three or four years previous to admission she had several falls, apparently the result of paresis; once, she fell down a whole flight of stairs and had convulsions during the following night. On admission intelligence very defective. Answers "I don't know" to all questions; powers of attention and understanding deficient; unable to look after herself; inattentive to the calls of nature and sometimes noisy. A well developed child, signs of puberty slightly marked; had never menstruated; pupils slightly dilated and of normal reaction; viscera were sound; considerable dementia; usually quiet and tractable; took no interest in her surroundings; when touched, however, cried and seemed frightened: much loss of memory and could answer correctly only the simplest questions; wet and dirty in her habits. After three months she was sent home

in the same condition; readmitted five months later a complete wreck, mentally and physically; could not stand alone, could not tell her own name, seemed to understand nothing that was said to her. Continually moved to and fro in her chair, uttering a crowing meaningless laugh and, when touched, she cried loudly and continuously; tongue tremulous, also lips; speech hesitating and ejaculatory; was soon confined to bed; limbs became strongly flexed; screamed a good deal, but showed no signs of intelligence. All evacuations were passed under her; very emaciated; bed-sores developed. No convulsions were noted. Died aged 16. (Abstract, Wiglesworth, *loc. cit.*, p. 359.)

### GENERAL PARESIS FOLLOWING ACCUSATION OF THEFT. AN ADOLESCENT CASE.

A young woman of 18, while going to a shop, dropped some money and a man saw her pick it up. He accused her of stealing it and gave her in charge. When taken before the magistrate, she was unable to make a reply, and was sent to prison for fourteen days. On returning home, her father found her entirely altered; talked of her wealth, etc., and he was told she had a kind of fit in prison. (Abstract, Sankey, Mental Diseases, p. 292.)

### A CASE OF JUVENILE GENERAL PARESIS AT THE AGE OF NINE YEARS.

Raymond reports the case of a girl, æt. 9, who showed progressive intellectual weakness, almost complete loss of memory, sensory motor disturbances, localized on the right side, disorder of speech and trembling of the lips, inequality of the pupils, with abolition of the pupillary reflexes, nystagmiform movements and slight strabismus, double, non-congenital, pigmented retinitis, and exaggeration of the reflexes. The psychic symptoms were temporarily benefited by mixed treatment. The disease was thought to be one of organic cerebral origin and general paralysis was diagnosed. She died several months later from a tuberculous broncho-pneumonia. Her brain was typical

of general paralysis. (Abstract, Philadelphia Medical Journal, Vol. 5, p. 680.)

### A CASE OF GENERAL PARESIS IN A GIRL NINE YEARS AND THREE QUARTERS OLD.

E. E. C., female, admitted March, 1894. It was the first attack and of five months' duration; she was dangerous, but neither epileptic nor suicidal. No history of alcohol, phthisis or insanity. Born January, 1884. Cause of insanity said to be a fall which she had in April, 1893, but no history of her head being injured and she returned to school in a few days. October 14th she was admitted, stated to be suffering from hydrocephalus and chorea; she had been "rather strange" but previously had been a child of average intelligence—able to read and write, etc. On admission to hospital she was pale and thin, looking older than nine years; weak intellect, with slight choreic movements. November 7, she has had alternate excitement and depression; pupils unequal, and general nutrition improved. November 18, constantly screaming. Her nightly temperature rose on a few occasions to 99° and once to 100.4°. After leaving hospital she began to show symptoms of insanity, and had sudden fits of crying; at times, restless and violent, at others silent and depressed; she did not recognize her parents; thought she had lost her money. Her speech had begun to fail when admitted to asylum. She was anemic, pupils semi-dilated, right reacts normally, left is fixed; head of large size; tongue straight, slightly furred; palate not unduly arched; body well nourished; heart and lungs normal; pulse 104, knee-jerk present, no clonus, she showed profound dementia, no reply to questions. "Mother," the only word she says. She constantly cries without apparent cause; vicious, bites and scratches those around her, requires feeding and is unclean. April 21, menstruated; in the same demented state; grinds her teeth; difficulty in swallowing; deteriorated physically until September 18 when she had epileptiform convulsions chiefly affecting right side and followed by paresis, which passed off on September 23. She walked with an inclination of her

body to the right, left pupil dilated, right contracted. October 26, dilatation of left pupil and flattening of left side of face; right pupil semi-dilated and reacts sluggishly, no reaction in left. December 10, more feeble, grinds her teeth, is sucking and picking at the bed clothes, can swallow only a little food at once. February 7, she is almost moribund. She takes no notice of anything; swallows with great difficulty and regurgitates most of her food; grinding her teeth and screaming out; very dirty. Died in February, 1895. (Abstract, E. L. Dunn, Journal of Mental Science, Vol. 41, p. 482.)

GENERAL PARESIS IN TWO SISTERS AT EARLY LIFE.

Ida, was healthy as a baby and seemed in every way normal; she was even considered very bright, but when aged about 10 she was thought to be growing lazy; instead of playing would sit about the house in an apathetic way. She frequently complained of stomach-ache, but had no vomiting. On account of this trouble she was kept out of school. When aged about 11 she began to be unsteady in her gait and had to be guided around. "Two years we dragged her around, two years she sat in a chair and two years she was in bed." When aged 14 her legs had a tendency to be drawn up, and later this became so marked that even passive extension was difficult; a similar condition also appeared in the arms. For the last two years she could not sit up in a chair; her voice became coarser and speech indistinct, at the end turning into a mumble. The mental condition approached a complete dementia and a year before death she knew no one. She lay in bed contracted, untidy, mumbling, picking at her bed clothes and unable to help herself in any way. There was no excitement or delusions, and no convulsions except a series of them shortly before death. She died in convulsions a week after their onset.

Rosa, now 19 years old, has been a healthy child and of average intelligence up to her fifteenth year, and has been considered feeble-minded by her family since her sixteenth year. She has had no excitement, delusions or

hallucinations. She first showed an inability to follow school work; then a lack of interest in, and an inability to understand, things, however simple. She could do crochet work, but no one could teach her a stitch different from the one she had always known. For two or three years her gait has been changed and she is somewhat uncertain; her speech gradually became altered. She has had no convulsions. After arriving at the hospital, she was not clear where she was, and did not mind her sister's leaving her. Afterwards, she said she was homesick, but was easily made to forget it. She was quiet and orderly, and absolutely unable to appreciate her surroundings. When asked to, she described a picture in a very elementary manner; her behavior was often silly. During an examination she would tell a perfectly irrelevant incident or laugh convulsively. She could recite poems she had learned at school, but did not grasp their meaning, for she often left out lines and words without noticing it. When asked to read, her mistakes were characteristic. Individual letters and most small words were correctly read when shown alone; longer words could not be read even after spelling, or they were mispronounced, as "laze" for lizard, "colking" for choking, etc. Figures could be read, sometimes four together, but never more. Writing showed mental defects analogous to those expressed in reading and also tremulousness, at once suggesting general paresis. She could not multiply correctly with numbers larger than four, and she did multiplication better than addition or division. All that she knew depended entirely on some well rooted association; no amount of practice improved her. (It should be remembered that she had been to school up to her fifteenth year.) The gait was tottering, the legs held far apart and stiffly; walking as though she was flat-footed and wavering from a straight line. The arms, during walking, were held away from the body, as if for balancing. She could stand with eyes closed and feet together, but not at all on one foot. Her speech was indistinct, monotonous, high-pitched and had a certain vibration to it; some words are slurred over, and there is a

coarse tremor about mouth and tongue; the face is somewhat one-sided; the patellar reflexes have been exaggerated and there has been patellar clonus but only slight ankle clonus. The reflexes in the arms were increased; the pupils have been unequal and do not react to light or accommodation; she perceives tactile impressions well, but pain sensations not so well; she could not feel the prick of a pin or the faradic or galvanic current. She shows no signs of hereditary syphilis.

These two girls are the youngest of a family of seven. The others are healthy and normal, and show no signs of hereditary syphilis. The mother had no miscarriages. The father, a Dane, has been unable to work for twelve years, although only sixty-one. He often became dizzy and could not direct his hands properly. Six years ago, he suddenly became pale, fell down and was weak on one side. He recovered completely. He often falls, partly because he gets dizzy, partly because he stumbles. Last year, he had two "boils" on his forehead containing dead bone; he has been irritable for years; denies syphilis; he had considerable facial tremor; speech not altered; tongue normal; handwriting tremulous; muscle power fair and equal on the two sides; gait tottering but not ataxic; he stood well with his eyes closed; knee-jerks are diminished; pupils normal; arteries are thickened.

Evidently it is not general paresis. (Abstract, Hoch, Aug., Journal of Nervous & Mental Diseases, Vol. 24, p. 68.)

### A CASE OF PRECOCIOUS GENERAL PARESIS.

A boy of neuropathic heredity, both paternal grandparents having had paralytic troubles, a cousin having been insane and his father formerly intemperate. No evidence of syphilis. During childhood was healthy, and a good scholar. At age of 14 he was put to work. After a month, his intelligence began to fail, had to be told everything that he had to do, wrote badly, could not make arithmetical calculations, seemed changed, taciturn and silly, stammered at times, hands trembled when tired. On admission, he had wet his bed for two months; backward

in physical development; slight evidences of puberty, although 17. Expression dull, walk clumsy, all movements awkward. His mind much enfeebled, seemed apathetic and indifferent. Memory poor, no delusions; tremor of tongue and lips extending at times to other facial muscles; articulation imperfect, especially when tired and with the lingual consonants; tremulous hands, clumsiness of handwriting with a tendency to omit and misplace; inequality of pupils; attacks of formication, beginning in right foot and involving the whole right side; headache, general muscular weakness, no localized paralysis, knee-jerk exaggerated. (Abstract, Charcot, Arch. de Neurol., March, 1892.)

A CASE OF DEVELOPMENTAL GENERAL PARESIS.

Annie H., admitted to Morningside, is the youngest of a family of four. The second eldest was a miscarriage; the other two are healthy. The patient was a normal child up to the age of eight. She got on well at school, until she was eight when a bad stammer developed. She then did work around the house, but the stammer got worse. When aged sixteen she was noticed to be more stupid than usual and forgot things; did not do her work well. These changes gradually increased; four years ago she was sent to poor-house, until she came to asylum. She had required constant attention, had no attacks of excitement, no delusions, spoke less and less and stammer got worse. On admission, aged twenty-three, she was well developed; absence of expression in face and eyes; movements lethargic; there was difficulty in rousing her attention to questions, would smile in a meaningless way, without provocation. Emotionally she was happy rather than depressed. There was considerable muscular weakness, some incoördination and slight tremors of upper lip; knee-jerk and other reflexes exaggerated; pupils unequal, slightly irregular, and did not react to accommodation; she had menstruated only once or twice when aged sixteen; teeth not well shaped; thickening of tibial bones, presumably of a syphilitic character. Since admission, she has lost

flesh and strength, confined to bed, very helpless; all the symptoms are now more pronounced. There have been slight rises in temperature with increased mental obscuration, never, however, reaching unconsciousness, regarded as congestive attacks. During them there is headache but no convulsive movements. She will not live many months more. (Abstract, Middlemass, Journal of Mental Science, Vol. 40, p. 41.)

**General Paresis in Woman.**— The disease runs a milder and longer average course among women, and remissions are less frequent. It occurs earlier in women and the fraction of female paretics under the age of thirty is nearly three times that of male paretics (Mickle). Recent statistics give the proportion of male and female cases as seven to one. Hereditary predisposition is frequent, and in fully one third of the cases syphilis is the etiological factor, some writers placing it much higher. Spinal symptoms are less noticeable than in the opposite sex, and the ascending form is rare.

Alteration of the menses, apart from that due to age, has been frequently noticed, but the influence of the climacteric, formerly so emphasized, does not appear to have the importance attributed to it. The course of the disease does not differ, as a rule, from that generally described, euphoria being present in most cases, while excitement and expansive delusions, though not infrequent, do not reach the height common in men. Although paresis is so common among men of the higher classes, women of these classes, as stated elsewhere, are not frequently attacked; but when women drink much bad liquor and live excited, irregular lives, they are readily subject to the disease.

Some writers speak of a form of the disease observed in late years, affecting man and wife at the

GENERAL PARESIS IN WOMEN.

same time and which is called "conjugal general paresis." It has its explanation in a reciprocal syphilization.

### A CASE OF CONJUGAL GENERAL PARESIS.

A woman admitted at the same time with her husband, both fairly intelligent, and with a seeming neurasthenic confusional state; wife had no motor symptoms; husband, diagnosed as general paretic; he rapidly went into an active maniacal state, delirious, persistent diarrhœa, died of exhaustion in three months, a few hours after a convulsion; died before being extremely paretic. The woman, although feeble-minded, went home, returned in a year, and later showed dementia, then motor signs, slight cerebral attacks, steady decline and death. (Abstract, Phelps, American Journal of Insanity, Vol. 53, p. 59.)

### GENERAL PARESIS IN A WOMAN.

Mary A., married, æt. 36. Formerly an actress; no insane relatives; present attack the first; supposed cause, great anxiety and money troubles of her husband. First symptoms appeared nine months before admission. She became excited and incoherent for twenty-four hours and thereafter showed mental weakness. On admission, she had vacant expression, wanted to be dressed elaborately, thinking herself a great person. When spoken to she replied by saying "jolly." She walked awkwardly; speech hesitating; comprehension dull; appetite good; loss of power over bladder and rectum. Within one month of admission she became noisy, violent, destructive and refused to take food. An erythematous rash, followed by large bullæ, appeared on legs; she had subnormal temperature. She steadily lost strength and died. (Abstract, Savage, *op. cit.*, p. 302.)

### A CASE OF GENERAL PARESIS IN THE PRODROMAL STAGE IN WOMAN.

Mrs.—, æt. 49 years. Four years ago consulted oculist for asthenopia, and especially for difficulty in accommodation. No mental symptoms were observed, although

at that time they were not carefully looked for. One year afterward, mental symptoms, considered of no import, were observed, she being exhausted by the care of an ill mother and sister. One year later still, she began to have attacks of loss of consciousness, similar to petit mal, after lying down or sleeping. She had several while standing, and thought she would have fallen but for support. She remembered much less well than formerly; was irritable, apathetic, indifferent, disinclined to exertion. She could not understand or remember clearly what was read to her, although she could talk of it in a general way. Her husband was surprised at some of her incorrect statements to the physician. He had noticed that she forgot where she put things, and what she was going to do. Showed less life and ambition in her face; loss of physical strength, especially in her legs, noticed when going up and down stairs. After walking a half mile she became tired, and her gait became unsteady and tottering. She was dizzy at times, rarely had headache; could not fix her eyes to read. Hands tremulous; slight hesitation in speech, which her husband and she thought natural; and articulation deliberate, almost sluggish. In spite of good appetite and hearty eating she lost sixteen pounds. I have not watched this case to termination but have no doubt of the result. (Abstract, Folsom, *loc. cit.*, p. 17.)

GENERAL PARESIS IN A YOUNG WOMAN.

Martha C., admitted, aged 20, the youngest of eight children. The second and third were still-born at the seventh month; the fourth had deformity of the spine, and died five months after; the fifth was a seven-month child and lived only two days; the others were living and healthy except patient. Five years ago patient's development came to a standstill, finally retrogression occurred, without any violent physical or mental course. First, alteration in speech, which became thick and slow; she also became stupid. All these symptoms grew more pronounced, she remained at home, had no fits or congestive attacks, no excitement or delusions. Weakness of mind

and body, only, led to her admission; physically she was fairly well developed; blank expression of face; often nervous or frightened; she would laugh or cry on slight provocation; memory much impaired; no grandiose delusions; gait unsteady, tongue and lips tremulous, speech slurred; pupils slightly dilated, the left larger than right, both irregular and reacting slowly to light, occasional nystagmus; knee-jerk exaggerated; had not menstruated; chest rachitic, teeth syphilitic; angles of mouth puckered as if from old ulceration. She became weaker in body, muscular tremulousness and incoördination increased, had to be kept in bed. Mental dissolution also advanced steadily, resulting in almost complete dementia. There was no outstanding event during the illness. Died less than six months after admission, the disease having taken five and a half years to run its course. (Abstract, Middlemass, *loc. cit.*, p. 38.)

A CASE OF GENERAL PARESIS IN THE PRODROMAL STAGE IN WOMAN TREATED FOR MALARIA.

A strong, healthy lady; forced to support herself because her husband had died four years before of epilepsy. She became an attendant in a public institution; after two years had to give it up, due to diminishing physical strength and mental indisposition or irritability. Went to New York city and was there treated for malaria. She complained of a feeling of weariness and lameness after walking. Her conversation did not indicate mental disease, but investigation showed that attention, concentration, memory and readiness of perception were impaired. There was deliberateness of speech and slowness of physical and mental action. She died four years afterwards in an asylum, a paretic. (Abstract, Folsom, *loc. cit.*, p. 8.)

**Senile General Paresis.**—See section on age under etiology.

## CHAPTER IX.

### PARTICULAR SYMPTOMATOLOGY.

**Moral Perversion.**—One of the most definite of the prodromal symptoms and sometimes the one first noted, is that of moral perversion. It is a result of mental disintegration, and may occur years before a marked outbreak of the disease. In other cases "simultaneously with memory, will and emotional unbalance the morals begin to totter." Here the symptoms are so obvious that a short time suffices to convince the most incredulous that disease is at work. The patient forgets business engagements, social proprieties, and moral obligations, and he is entirely oblivious of responsibility in any one of them. Positive misdoing rapidly develops; he uses improper language, mistreats wife and family, and indulges in excesses of all sorts. All of these tend to hasten the disease. At necessary remonstrance he creates a disturbance, perhaps uses violence, and is soon adjudged insane.

But in a majority of cases the onset is much more gradual; little by little the character and language change. The moral lapse seems at first a fault of memory, a thoughtless appropriation of trifling articles, that naturally he would not desire, and, perhaps, a seemingly unconscious error of propriety. But a little later he steals in the most open way—anything and perhaps gives it away at once.

These persons are most unconcerned when caught thieving and at once give a reason for their conduct. Often the affections change, and the sense of moral responsibility is wholly lost. This is always con-

nected with the progressive advance of the mental weakness. It has been pointed out that these moral lapses differ materially from the overt acts of those afflicted with so-called moral insanity. In the latter, as the result of a perverted moral sense and defective inhibitory action the instinctive impulses gain ascendency. On the other hand it is shown that in the paretic the deficient moral tone is due to a clouded intellect, the result of incipient dementia. This is quite apparent if we analyze the act, not only in respect to its motive, which is not impulsive but casual, but also in the mode of its accomplishment, which is devoid of forethought and judgment.

AN ACT OF ARSON IN A PARETIC.

S. B., æt. 40, laborer, single, tried for burning a stack of straw. Fourteen years before he had severe head injury from a piece of falling coal. (Abstract, Baker, J. Journal of Mental Science, Vol. 35, p. 50.)

INDECENT EXPOSURE IN A PARETIC.

A professional man, who was arrested for indecent exposure and fined by the court, retired from the court room and repeated the offense. (Abstract, Stearns, Mental Diseases, p. 478.)

A STUPID THEFT BY A PARETIC.

A patient under my care broke into a shop window, abstracted a handful of cigars, and then sat down on the curbstone to enjoy them, when he had sufficient money about him to supply his needs. (Abstract, Berkley, Mental Diseases, p. 174.)

REPEATED PILFERING; MARRIED A MULATTO.

A patient, at an early period in his disease, would pick up small articles from store counters and put them in his pockets, and would not miss them when others removed

them. He always strongly affirmed that he had bought articles, or that they had been given to him years before.

This patient, a physician, had married a mulatto woman two or three years before his friends had him placed under legal restraint. (Abstract, Stearns, *op. cit.*, p. 472.)

### DISHONEST TRANSACTION OF A RAILROAD OFFICIAL WHO PROVED TO BE A PARETIC.

A railroad official, well known for his thrift and business ability, with no previous mental symptoms, went to a small town in western Virginia, where he was known. He took a room at the principal hotel, purchased several properties, and told his friends that a railroad was to run through the place, and that he had bought the properties so as to forestall the projectors of the road, as they wished to locate their depots and offices on these sites. He was so well known for his business acumen that a syndicate was formed by the local people, and the land rebought at an advance of thirty thousand dollars. The man left the town with his gains, which he dissipated within a few days. (Abstract, Berkley, *op. cit.*, p. 173.)

### THIEVING BY PATIENT EIGHT YEARS BEFORE ONSET OF DISEASE.

An old government officer, for eight years prior to his reception in an asylum, had been guilty of repeated abstractions of articles at public sales which he attended officially. After the last theft he was arrested. His physician at once saw that he was mentally affected; pronunciation embarrassed, face "petrified," walk heavy; when asked as to the circumstances of his arrest, the patient answered without remorse or shame: "The people who put me in prison are imbeciles, who know nothing of our professional usages. There is a custom among us, known as the 'cote G,' to choose some object of slight value and retain it when taking the inventory." And with this he took from his pockets a meerschaum pipe and a gold-mounted tobacco pouch. He was pronounced a paretic,

and died a few months later. (Bierre de Boismont, *vide* Spitzka on Insanity, p. 187.)

A PARETIC FISHERMAN ARRESTED FOR THEFT.

A fisherman, who had presented signs of paretic dementia for six months, as it was subsequently ascertained, was detected emptying the nets of others and appropriating their contents. He was first beaten by the owners and then taken before the court. Here he declared that his oars had become entangled in the nets and that he had taken the fish out in order to rearrange the nets, intending to replace the former. This explanation was rejected as a "cunning evasion," and a physician pronounced him of sound mind, although suspicions that he was insane were suggested by witnesses. The prisoner also announced the project of running a net across the Elbe river to be dragged by two steamers, thus catching all the fish at one swoop. (Simon, *vide* Spitzka on Insanity, p. 188.)

**Sexual Instinct.**—In general paresis there is an insane exaltation of the sexual nature in many cases. The sexual power may be weak but the passion very strong. The female betrays much personal vanity and self-consciousness in the presence of men; she is often engaged in matrimonial designs. Frequently, the male patient suffers from the delusion that his wife is unfaithful to him, while he may run into vile excesses himself.

LOSS OF SEXUAL ABILITY IN PARESIS.

Loss of sexual ability in one case was among the earliest indications of the disease. (Abstract, Stearns, Mental Diseases, p. 472.)

LOSS OF SEXUAL ABILITY AS AN EARLY SYMPTOM.

In a case of the writer's experience, the wife mentioned loss of sexual power as an early symptom in the husband, although the desire was stronger than normal.

PERVERSION OF SEXUAL INSTINCT IN PARESIS.

Another case, which was in the second stage, displayed little or no natural sexual desire, but at the same time, shamelessly masturbated in the presence of his wife, to whom he was devotedly attached.

**Hallucinations.**—Hallucinations of the special senses occur in about half the cases of general paresis. Visual and auditory hallucinations are the most common and according to Mickle are found in forty per cent. of the cases; next in order, are tactile, gustatory and olfactory hallucinations, which are present in about twelve per cent. Hallucination of all of the special senses is sometimes found in the advanced stages, the patient showing visual, auditory, olfactory, gustatory and tactile perversion, the result of the advancing degeneration of the neurons of the cortex.

The hallucinations of paretics are usually variable, unstable and inconsistent, being less systematized than those of many other forms of insanity. Spitzka compares them with those found in some of the acute insanities, such as in alcoholic insanity and contrasts them with those of paranoia, where they are fixed and systematized. Hallucinations, illusions and delusions are liable to be combined in varying degree, and it is troublesome, if not occasionally impossible in practice, to separate the long catalogue of these perversions into their respective category. Again, prominent delusions may mask the less conspicuous manifestations of the other morbid perversions, and to this fact may be attributed the paucity of hallucinations among paretics that is found in the experience of some observers.

Visceral sense-impressions, scarcely noticed in normal conditions, are vivid in the paretic and become linked with his delusions. Especially is this

the case in the hypochondriacal form when, visceral sense-impressions (illusions) are a marked feature of the perversion. Joyful hallucinations accompany the ambitious deliria, while painful ones pursue those afflicted with melancholic depression. In one case, countless frogs were seen by the patient hopping about him, whose intestines bulging out from the vent, had been stuffed into their mouths; another patient heard voices commanding him to kill some one, in order that he might himself be compelled to commit suicide (Spitzka).

Some writers hold that the sense of pain, expressed in groans and cries in the last stage of the malady, is not hallucinatory, but is due to nervous lesions, either central or peripheral, and that the assurance in personal strength, frequently so confidently expressed in the first and second stages, is not a delusion, but more properly an hallucination, due to the morbid perversion of the kinesthetic sense.

The question is sometimes asked whether hallucinations are met with more frequently in the expansive, or in the depressive form of the disease. It seems to be a very general experience that they are oftener found in the latter cases, or it may be, owing to the distressing nature of these hallucinations that they are forced more readily on the attention. Campbell Clark gives a striking example of the uncanny nature of these hallucinations in the depressant form. The patient declared that he had seen in the night his house filled with black dogs, and the noise of their howling kept him awake all night. He had the hallucination, also, that a drowned man was touching him; said that his saliva tasted very bitter and that it was poisoned; that laudanum had been given him; and the doctor had opencd him in his sleep; and that he had been blistered with two fly blisters.

## CHAPTER X.

### PARTICULAR SYMPTOMATOLOGY (*continued*).

**Facial Expression.**—The face of the paretic presents a characteristic lack of expression. The tense facial muscles, which give expression to the individual face by the special lines and wrinkles which they cause, become enervated, and no longer respond to the quick play of feeling, which may, or may not, still exist in the mind. In either case the expression is comparatively characterless. The face takes on a puffy, apathetic appearance, somewhat resembling the cast of the drunkard, with which it has been compared. This expressionless, mask-like look has been termed "the petrified face."

While the patient is uninterested or the features are in repose, the expression is peculiarly blank and stolid, but when animated there is a complexity of expression difficult to describe. There comes a tardy and usually but a partial response to the facial muscles; the face may beam with excitement, the eyes staring and the mouth smiling, and at the same time the lips and facial muscles become tremulous, so that the expression is a mingled one of pleasure, pain and surprise, which only interest or excitement prompts.

Frequently, because of the irregularities of innervation, one part of the face expresses one emotion, while another part expresses a different one, and, as has been said, it "reminds one of a badly executed portrait, in which the features do not harmonize in their expression" (Sankey).

Some parts of the face are more continually in action than other parts and they show first the lack of control. The mouth loses its firmness, and the lower part of the face becomes smooth and heavy; the naso-labial lines disappear, leaving a puffy and sometimes pouting look about the mouth, and almost always there is added a tremulousness of the lips.

Sometimes there is a sleepy look about the eyes, and a relaxing, which may amount to a paresis, of the muscles of the upper part of the face, causing a drooping of the eyebrows. The eyelids sink, and a vacant expression is the result. But, again, there may be a muscular twitching about the eyebrows, and a muscular tension about the forehead, which tends to keep the eyes very wide open and to produce an unusual expression of unfelt astonishment. Often the forehead is corrugated and remains so to the end. Towards the last the facial aspect is dull, glassy and vacant, giving no sign of emotion, excepting, now and then, a furtive glance of amazement, or of fright.

**Speech.**—The speech early betrays the existence of general paresis. This, the highest expression of mental life, the most delicate of motor-coördinations in the well-modulated voice and clearly-enunciated words, the last accomplishment to be acquired, is the first to fail.

The complications necessary to a communication of ideas must necessarily be touched on every side by the beginning of this disease. The formerly clear mind is troubled by a sense of confusion, an inability to command immediate control of the mental processes; this is followed by intellectual weakness and by impairment of memory and of attention. At the same time a slight hesitancy in speech, together with a trembling or slight stiffening of the upper lip, early

shows a disordered relation between ideation and the coördination of the vocal organs. The peculiarity of speech is difficult to describe, for there are always slight individual differences, but it is so characteristic that heard a few times it is readily recognized.

Under the three stages of the established disease will be found a detailed description of the paretic speech. It is not unusual to find aphasia associated with paresis, as the following cases illustrate:

THREE CASES OF GENERAL PARESIS EXHIBITING APHASIA.

1. A paretic, when received, was unable to express himself intelligently; he understood what was said to him, and could repeat words spoken to him without difficulty. Motion on right side was more impaired than on left. Subsequently, an epileptiform attack left total right hemiplegia and complete aphasia continuing until death, nine months later.

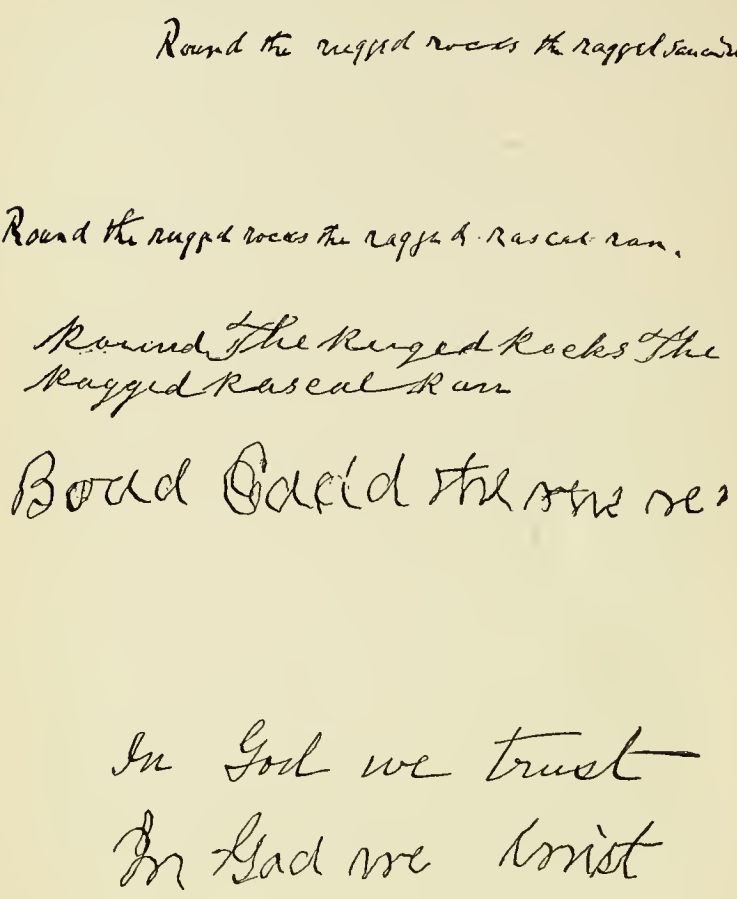
2. A paretic, had aphasia on admission, being complete word deafness, which came on after an apoplectic attack; a year previously, there had been transient right hemiplegia, after which he only uttered a few unintelligible sounds; he understood nothing of what was said to him and expressed himself by gestures. Death from edema of lungs.

3. The patient's illness was attributed to a severe blow on the head, followed later by an apoplectic seizure, leaving right hemiplegia and aphasia. When received under treatment, there was paralysis with contracture of the right extremities, general muscular weakness, and apparent inability to understand what was said; he died from pneumonia. (Abstract, Rosenthal, American Journal of Insanity, Vol. 46, p. 398.)

APHASIA AS AN EARLY PRODROMAL SYMPTOM.

The wife of patient noticed temporary loss of speech, followed by hesitation and tremor nearly eight years before serious disease was suspected. The attacks of aphasia recurred at intervals and when it became necessary

Round the rugged rocks the ragged rascal ran.



SPECIMENS OF THE HANDWRITING IN GENERAL PARESIS.

These are facsimiles of the handwriting of three paretics, all of whom were in an advanced stage of the disease. In the last case the patient was found to be too much demented to complete the alliterative lines, so he was then given the easier task of writing the shorter sentence. Observe in the first instance that he started to sign his name when he had finished the first word of the sentence; he was persuaded, however, to continue with the copy, with what ill success may be seen, after the abortive attempt to write Edward, his christian name.

to send the patient to an asylum, the difficulty of speech and tremor of tongue and lips were well marked. (Abstract, Savage, *op. cit.*, p. 286.)

**Handwriting.**—The handwriting of paretics is of importance, as it early shows tremor in the wavy up- or down-strokes. This tremor of itself will not decide the case, for tremor may occur with age, alcoholism or in different nervous defects, and specimens of handwriting from all are similar; but the general paretic shows an inability to control the attention for any length of time, and with the effort comes an increasing weakness of understanding and memory.

In the first stages the patient may write a fairly steady hand, but there is a lack of carefulness in the finer movements; final letters are often omitted; lapses of words, reduction of double consonants, repetitions of words or even of sentences, reduplication of letters or syllables all tell the story of unusual effort required to write clearly. Early in the disease the patient may notice his failure to write rapidly and by writing slowly may cause a decided improvement, but as the disease advances he loses this power of control. The handwriting degenerates to a scrawl, and the deviations from straight lines become more apparent. In lengthy documents the beginning may be fair, but as the patient tires a little, the formation of words grows more irregular. It becomes impossible for him to follow the line; he writes above or below it but usually runs obliquely down across the page. The omission of words happens more frequently, and a meaningless repetition of even whole sentences may occur.

The serious mental condition is apparent in these efforts, as well as the lack of muscle control; the ideas are confused and the sentence seems to fade

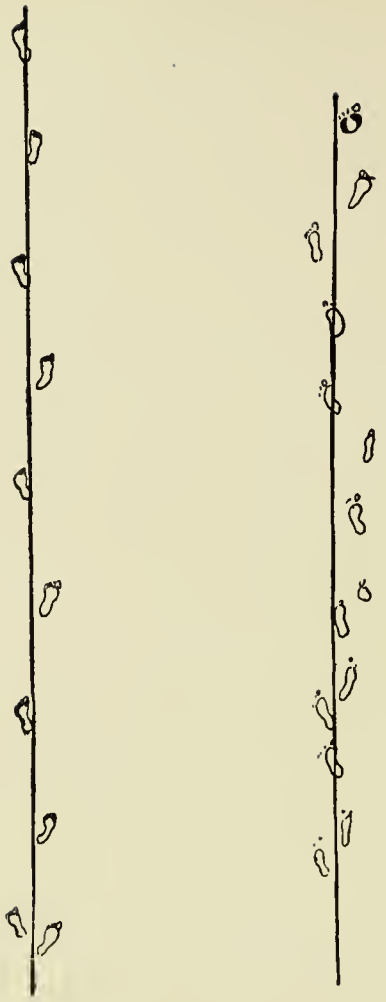
from the mind before the patient can put it on the paper. Many patients show an inclination to deal with financial affairs, and their scrawling letters contain orders for expensive jewelry, famous pictures or checks for fabulous sums.

As the disease advances, the writing becomes more and more illegible, and when the patient is unable to make himself understood in speech, he can no longer write.

Gait.—In the first stage of the disease one unacquainted with the patient might fail to notice anything peculiar in his walk, but to the trained eye, or to an acquaintance, a stiffness of gait is readily apparent; it may seem only an unusual dignity of bearing, but there is an absence of elasticity, the feet are not raised as much as usual, the steps are shorter and quicker, the heels are set down with more force, and the body is held in such a way as to give an observer the idea that the head must be balanced with care. The patient will find difficulty in stepping up into a chair; he may walk well on even ground or on a floor, but stumbles in walking on uneven or unfamiliar ground, or if it be necessary to step over any obstruction, even though seen perfectly. Quick movements, like dancing, are impossible. Going up and down stairs is troublesome; the whole foot must be rested securely on each step and a careful poise of the body must be maintained.

This impairment in coördination may be noticeable some time before any mental symptoms appear.

In the second stage of the disease the impairment in gait is very obvious; even the station is affected, for the patient never shifts the weight of the body from one foot, nor does he move in an easy, careless manner, but instead keeps the body firmly poised on both feet, and in walking, often inclined to walk




NORMAL GAIT COMPARED WITH THE GAIT OF GENERAL PARESIS.

*a*, normal gait, the spaces are equal and the feet follow the same line of direction *b*, paretic gait, steps unequal in length, direction irregular.

toward one side when meaning to go straight forward. The step is now made with a jerk at the knee, and later, as the knee grows stiff, the movement is from the hip joint, giving a swaying motion to the body. The legs are kept somewhat wider apart and the muscular movements become uneven and tremulous. However, these symptoms may improve with quiet, or even with a night's rest, so that a physician seeing a patient only occasionally may miss these accompaniments of the disease.

Toward the third stage walking can be accomplished only with care and attention. Before starting the patient looks down at his feet, is not interested in objects about him, but seems wholly occupied with the effort of walking, and if addressed he stops to listen and answer, showing that he cannot walk and talk at the same time. If asked suddenly to turn when going straight forward, he turns with care, or sometimes sways like a drunken man.

The gait becomes more remarkable as the paresis increases; the legs are dragged along the floor, often unequally, and walking is accomplished with more difficulty, until towards the end the knees fail, the patient tumbles frequently and at last he cannot stand.

The muscular strength may still be fairly good and even when entirely unable to walk and obliged to take to his bed, the patient may show considerable power in muscular tests. But from the first it is not so much muscular strength he lacks as power to direct.

The different associations of phenomena in general paresis are of the greatest interest. One set of muscles may be more affected in one case and another in another. Usually not until after the speech becomes difficult are the changes in gait

observed, but the two may occur together; or the articulation may be much impaired, the legs and arms being scarcely touched; or again, marked ataxia of the legs may occur when the articulation is not at all, or but slightly affected. Moreover, a firm, elastic walk with full muscular vigor of limbs may be found with the exaggerated deep reflexes and a pronounced irido-motor paralysis, or we may see either a normal or an ataxic gait free from exaggerated reflexes and associated with similar irido-motor trouble (B. Lewis).

Like the mental symptoms, the motor symptoms may disappear almost entirely for a time.

A CASE OF GENERAL PARESIS WHERE THE EARLY SYMPTOMS WERE MARKED BY VERTIGO AND IMPAIRED GAIT.

A patient required his wife's support to prevent himself from staggering against passers-by. If alone he had to walk near a support. The character of gait had existed several months before any change in his mental condition was noted. (Abstract, Stearns, Mental Diseases, p. 475.)

**Tremor.**—Muscular tremor affects all parts of the body, but before the last stage it is variable in different sets of muscles; it may be extreme in the facial muscles or slight in the extremities, or *vice versa*, depending on the location of the lesion. The facial and lingual muscles are most quickly affected in paresis. While attention is called to the fact that facial tremor seldom occurs in neurasthenia, cases do happen, and may be distinguished from the tremor of paresis in its being less jerky than the latter, especially in the beginning of a voluntary movement. A paretic in protruding the tongue does it with a slightly jerky movement, as if uncertain how much force is being used. This movement may be hardly noticeable in

the early morning, but is quite plain later in the day after talking and particularly after eating. And in showing the teeth, or in wrinkling the forehead, the same ataxic tremor may be noted in these parts of the face.

This tremor is sometimes called "emotional tremor," but incorrectly; for while the twitchings of the muscles of the mouth may give to the patient the appearance of being under emotional strain and may suggest the coming of tears, frequently no emotional condition exists, or the patient may be in gay mood. This tremulousness is especially noticeable in the beginning of a voluntary effort, when the paretic wishes to answer a question or protrude the tongue. This tremor of the various muscles may at times seem slight, as compared with the progress of the disease marked by other symptoms, while in other cases it may be excessive, as compared with these same symptoms.

The disorder attacks in the beginning the more highly coördinated muscles—the lingual and facial and those controlling the delicate movements of the fingers. The control is lost, at first only temporarily, but gradually the tremor becomes continuous and the control passes almost entirely beyond volition. Thus early tremors have often a rapidity of ten vibrations per second, but later they become coarser. The larger groups of muscles become affected and towards the end an extreme and constant tremulousness accompanies all the voluntary movements.

**Reflex Action and Reflexes.**—It is seen, from a review of the literature as well as from experience, that the reflexes do not possess a uniform deviation in a definite line as the malady advances.

The reflexes are at times so enormously increased all over the body that a sudden puff of air blown

into the face of the patient may cause unusual reaction. Clouston, Mickle and Folsom especially refer to this condition.

A CASE OF EXCESSIVE REFLEX EXCITABILITY.

In G. M. general paralysis began with aphasia. As he began to speak, the peculiar articulation was noticed and he died in about two years. In this case, the motor reflex excitability of the brain and cord was greater than I have ever seen in any case whatever. A very slight tap on the toe would set up a convulsion, first in that leg, and then in the next, a slight puff suddenly into his face would make him jump wholly off his seat. (Abstract, Clouston, *op. cit.*, p. 400.)

The superficial reflexes may be lessened, lost, or increased at any period; as a rule, the skin reflexes are often lessened or lost, which is particularly the condition in the last stage.

Bianchi and Bettencourt-Rodrigues (*vide* Mickle) observed that in general paresis, expansive mental symptoms correspond to exaggerated reflexes, mental depression to lessened or abolished reflexes. But in the early stage of a typical case are exaggerated knee-jerks, and lessened or lost plantar reflex; and the early exaggeration of reflexes is supposedly related to the congestion, excitement, functional dynamic quasi-exaggeration of the early stages of general paresis.

Lewis and others give exaggeration of the knee-jerk as the more frequent phenomenon; although they may be temporarily or permanently increased, normal, lessened or lost. He adds that it may be simply a functional disturbance, transient only, induced by nervous discharges from the cerebral cortex. If temporary, it is often found as the immediate result of a congestive seizure. On the other hand,

it may be a sign of organic disease of the spinal cord, with accompanying symptoms of descending sclerosis. "It is important," he says, "to note that we have as associated phenomena in many cases of general paralysis, a firm elastic walk, with full muscular vigor of limbs, exaggerated deep reflexes, and pronounced irido-motor paralysis."

The jerk may differ in the two limbs. It often varies in quickness in different cases and in reaction time. The superficial and the deep reflexes are often dissimilarly affected in the same patient at the same examination. The reflexes vary greatly under conditions of rest, fatigue and excitement. In the tabetic form of general paresis the knee-jerk is usually absent or diminished, although it may be normal or increased. As a general rule, when the patellar reflexes are absent, the plantar reflexes are also either absent or diminished.

Mickle groups with the absent and exaggerated knee-jerks certain definite symptoms: "With absent knee-jerk a relatively larger share of pain, wet habits, hallucinations (and slightly, of epileptiform seizures and ataxiform gait); and lessened feeling of, and motor reaction to, pinches and tickling of the feet. And, on the other hand, with exaggerated knee-jerk a large, almost exclusive, share of quasi-syncopal seizures, and much jerk and spasm in movement." Pickett,[1] in a clinical study of one hundred and forty-nine cases occurring at the Philadelphia Hospital found that the relative condition of the knee-jerks in the entire series was in the following proportion: Increased in 49 per cent.; diminished in 10 per cent.; absent in 31 per cent., and normal in 10 per cent.

Under eye symptoms will be found pupillary reflexes.

[1] The Philadelphia Medical Journal, Vol. 9, p. 581.

### A CASE OF GENERAL PARESIS WITH "CROSSED REFLEXES."

Male, æt. 55, with the usual mental and physical signs of general paralysis. "Crossed reflexes" were noticed after the disease had advanced to the stage that compelled the patient to be kept continually in bed. At this time, in addition to the exaggerated knee-jerks, it was noticed that the patellar tendon was associated with a contraction over the outer and upper part of the opposite thigh in front. This crossing occurred with both knee-jerks, but the contraction was more on the right thigh than on the left. The same crossed contractions were associated with the plantar reflexes. Ankle clonus was faintly present, but there was not any crossing. There was no crossing with the other reflexes. The interscapular, abdominal and epigastric were absent, the gluteal brisk, cremasteric faint and pupillary sluggish. (Abstract, Cottom, American Journal of Psychology, Vol. 5, p. 84.)

## CHAPTER XI.

### PARTICULAR SYMPTOMATOLOGY (*continued*).

After the onset of the established disease many of the patients are subject to episodes of cerebral origin. These attacks comprise apoplectic, convulsive and paralytic seizures. Lewis designates them as follows:

| | |
|---|---|
| Syncopal or quasi-syncopal attacks. | Epileptiform discharges. |
| Petit mal, or, exceptionally, grand mal. | Apoplectiform, or true congestive, attacks. |
| Limited, or unilateral, twitching. | Hemiplegia and monoplegia. |

**Syncopal Attacks.**—Vertigo, or "slight faintness," is often the first indication recognized by the patient and his friends, at the onset of the disease. The patient does not lose consciousness, but feels disposed to sit down to rest for a few minutes. These attacks are referable to a spasm of the vaso-constrictor nerves of the pial vessels, with subsequent damming back of the returning blood, with irritation of the nervous elements.

Syncopal attacks are by no means uncommon, during the course of general paresis, and often are the first signs of a failing circulation. A patient, after eating, suddenly blanches and falls forward; his pupils are dilated, his pulse feeble, his skin becomes cold and damp; no convulsions follow and shortly he rallies and recovers his former condition.

### GENERAL PARESIS BEGINNING WITH VERTIGO.

A case in which the first indication recognized was an attack of vertigo and slight faintness requiring the patient, at his store, to sit down for a few minutes. He did not lose consciousness, soon arose and going to his doctor, explained the character of the attack. During several months, he had no such further attacks. Somewhat overheated and fatigued at noon in June, he laid down to sleep. After a short time, he awoke in a delirious condition, in which he continued, a part of the time, greatly excited for three or four weeks. The delirium and excitement then gradually passed away, leaving the mind at times confused and with delusions of importance. He has had no attacks approaching the nature of an epileptiform seizure or loss of consciousness or even vertigo, to the present time, a period of nine months, though other symptoms are well marked. (Abstract, Stearns, Mental Diseases, p. 474.)

### A VARIETY OF CEREBRAL SEIZURE IN WOMEN SIMULATING KATATONIC SYMPTOMS.

Naecke observed three paretic women who had repeated attacks of stupor with muscular tension. They became speechless, head bent forward, face pale and expressionless, eyes wide open, staring into vacancy; they seemed without comprehension, had to be fed and forced to move. Both stupor and muscular tension usually disappeared in a few hours. (Abstract, American Journal of Insanity, Vol. 50, p. 79.)

### GENERAL PARESIS DEVELOPING IN A MAN SUBJECT TO SYNCOPE FROM INFANCY.

A patient, 42 on admission, had syncope from his infancy, on the least annoyance; he became pale, fell down and lost consciousness, and on coming to, he would have severe headache. He conducted an important business and had three children. His mother and brother presented the same symptoms. While in asylum, he had no syncopal attack. (Abstract, Christian, *loc. cit.*, p. 496.)

**Apoplectiform Attacks.**—It is not always possible to separate sharply in clinical work the various forms of cerebral seizures, but there is an apoplectic type, which may be associated with slight convulsive movements, although not so necessarily. These attacks are less frequent than the epileptiform seizures. Premonitions may be present or absent, while the attacks vary in degree from the slightest symptoms to those of the most extreme type. The symptoms are as follows: There is generally a precedent rise of temperature, expressed in a congestion of the face with heated skin. The pupils may be dilated. Paralysis, especially of the unilateral form, follows, with possibly conjugated deviation of the eyes with rotation of the head. The condition simulates pathologically the physiological action of the nitrite of amyl. The patient has observed for some time that his head feels dull and heavy, he experiences sudden rushes of blood to the head, his temporals beat violently and for the moment he is unable to speak or even think. These attacks may occur at any time; they may be so slight as to cause scarcely any interruption of the flow of ideas, or they may resemble apoplexies, due to extensive hemorrhage.

Tetanoid seizures may occur, with tonic spasm of the muscles of the chest and neck, resembling epileptiform seizures. Pleurothotonos and even opisthotonos may be present. Hysteroid waves occur, chiefly in women, but in men there may appear uncontrolled emotional outbreaks.

The import of the apoplectic seizures is even graver than that of the epileptiform. One of the chief dangers to the patient is from pneumonic hypostasis.

GENERAL PARESIS WITH REPEATED ATTACKS OF CEREBRAL SEIZURES.

Mr. X., æt. 41; single; grocer. His father died, æt.

83, of urethral fever; his mother, æt. 50, of cancer. One half brother has had a systematized hypochondriacal delusion for some years. A half sister has been neurotic and her husband, a second cousin, committed suicide while suffering from nervous depression. A daughter of this sister has been hysterical for some years and has been almost insane for some time. Another half sister, by another wife, and born after the father was sixty years old, is neurotic with intense egotism and slight intellectual imperfection in the form of inertia and absence of ambition. The only brother of the patient is sound, mentally and physically. His paternal grandfather was a confirmed alcoholic. His maternal grandparents were healthy. Mr. X. was not peculiar during childhood and youth except morbidly sensitive to criticism and would seclude himself if offended or disappointed. He was successful at business and very much liked. His business was destroyed by fire and he became very poor. He disappeared for a year, and when found he was penniless and very much run down. He would not tell anyone what he had been doing. His relatives found him employment. Twenty-two years ago he was under treatment for the alcohol habit; for two years before admission he indulged in sexual excess and has suffered from nocturnal incontinence of urine, and recently from imperfect control of the vesical sphincter during the day. A year ago in July, he had an attack of numbness in the left side and has had over ten similar attacks since, resulting in a paresis of that side; also he began to have difficulty in articulation, especially if fatigued or excited. Within the last six months, his spelling has become worse; he omits words in writing or dates letters wrongly; his penmanship varies: part of it is in a fair round hand and part of it is a dragging scrawl; some words, begun well, end in a confused blur. The letter is not signed. He is unable to add a considerable column of figures in his accounts and often drops an important item. Within three months, his ideas have become confused and he cannot think clearly; he lost his way in Boston where he is perfectly at home. At a junction, he got out of a car and then got into it again, thinking

he had made the change. He cannot relate facts as they occurred or as they were told him. He severely hurt his foot by a fall, a few months ago, during a paretic attack. Recently, his temper has been excited violently by trivial things; in speech and manner only, however, and he has never threatened injury to anyone. His statements are usually wholly unreliable. The night before admission, he was found sitting on the front steps with nothing on but a shirt, having thrown his pantaloons into the street. On admission, well nourished; appetite good; bolts his food; bowels constipated; urine negative; heart action regular but weak; pulse 96; tongue edematous, fissured, without coating, very tremulous when protruded; speech hesitating; linguals pronounced with difficulty; facial muscles brought into play in talking; pupils react to light but there is commencing atrophy of the retina. There is quantitative electrical change in the muscular system generally and in the left leg especially. He is very self-conscious, irritable and suspicious. During the first month's residence his general condition improved but he became very hypochondriacal, thinking the various paresthesiæ were organic complaints in the parts. He had a slight apoplectiform attack in the early part of the month; during the latter part, he developed modified delusions of grandeur concerning his own identity and his possessions. During the next month, he had two apoplectiform attacks, one of them with motor aphasia lasting an hour. His incontinence was present night and day: gait more ataxic; failure of memory more marked. During the next month he was exalted, showing explosive and boisterous mirth, or anger for trivial causes. During the next three months he had three paretic attacks, each one leaving the left side weaker and his ataxia more marked. He heard voices at night ridiculing him. With the last paretic attack, there was ptosis of left eyelid, with anesthesia and absence to response to either electrical current on the left side. There was progressive physical failure, rapid mental reduction, loss of memory for recent events and great confusion of thought. At the end of the period he could not get up or

down, dress or undress: he could walk in a straight line if started, but fell if he attempted to turn. In the morning, he could articulate fairly well and write connected sentences, but his ability decreased during the day, so that by evening he could do neither. He also had temporary paresis of the vocal cords, making his voice husky for a day or two. At times, there was complete aphonia. During the next two months there was no change except that he thought there was some one in his room impersonating him. He could see and hear some one. He said that this strange man put him out of bed and was trying to steal his clothes. This delusion persisted for a long time, gradually merging into the idea of dual personality, with whom he kept up an almost continuous conversation. This idea disappeared only when the mental reduction had reached the degree necessary to abolish it. At the end of the next two months, he was eating heartily but carelessly, bolting his food; not sleeping well; no change in the motor paresis, can walk fairly well but cannot get up. A week later, his mirror had to be removed to prevent his breaking it in efforts to get at the person who was disturbing him. During the day, he is in constant communication with his double, who tells him he is going to die of starvation. The lingual and laryngeal paralysis is progressing, so that he speaks only in a low monotone. In a year and a half, he was entirely demented and helpless. The left side was entirely paralyzed. (Abstract, Tomlinson, Journal of Nervous and Mental Diseases, Vol. 16, p. 766.)

GENERAL PARESIS BEGINNING WITH CONGESTIVE SEIZURE.

Robert M., æt. 34, stupid, mentally clouded, had hallucinations of hearing, heard people telling him to do things; tongue tremulous; left pupil larger than right; plantar and knee reflexes exaggerated. Mentally the patient cleared up and was discharged; a few months later he returned with marked motor symptoms of rapidly advancing signs of general paresis. He probably had had a congestive attack and was recovering from it before admission. (Abstract, Campbell, Clark Mental Diseases, p. 221.)

**Epileptiform Attacks.** — Cerebral congestion may appear at the outset of the disease, as well as terminate it in its later stages. It may be looked for at any time in the course of the disease. One of the most serious forms of congestion is the epileptiform attack. There is a sudden loss of consciousness with the typical warning cry, pallor followed by flushing, foaming at the mouth and convulsions. These convulsions may be general, or limited to one side, or even one limb. The temperature usually rises, even to the height of 103° to 104°. These attacks, as a rule, are not isolated, but occur in sequence, separated by longer or shorter periods of coma, even amounting to a regular status epilepticus.

Mental deterioration invariably follows; the conditions are aggravated and death often occurs in the attack. The prolonged rise of the temperature points to this contingency. Some complication is generally left behind, such as hemiplegia, aphasia, paresis, if death does not actually ensue.

It is a grave condition, which must always be attended with the gloomiest forebodings. It is regarded rather as a symptomatic epilepsy than true epilepsy, although clinically it shows no essential difference. These attacks may occur early in the disease, but generally not until a year has elapsed. According to Newcombe, out of one hundred general paretics, fifty-one had epileptiform seizures, but only one had convulsions within three months of the onset.

Lewis, who has studied this condition carefully, believes that the onset of the attack is almost invariably hemispheric, *i. e.*, that the convulsions begin unilaterally and may, or may not, spread to the opposite side; that they are often preceded by a well-

marked tonic stage, as the rapid primary discharges occur; that the clonic stage, being often long protracted, becomes more and more broken up into intervals of comparative rest, until at last an occasional convulsive jerk of the limb, or separate muscular contractions alone prevail.

GENERAL PARESIS BEGINNING WITH CONVULSIONS.

A porter had been promoted to a position where greater responsibilities and labors of a mental character were thrown on him; in the midst of apparent health, having been slightly worried, he was seized with a convulsion, lasting several hours with partial consciousness and later these convulsions occurred in status-like succession at intervals of a week for some months. Eighteen months after, the convulsions having been absent for a year, he died with the quiet type of paresis. (Abstract, Spitzka on Insanity, p. 205.)

GENERAL PARESIS BEGINNING WITH CONVULSIONS.

One of my patients had many epileptic-looking fits for a year, and was treated for epilepsy by eminent physicians during that time before the usual mental and motor signs of general paralysis appeared. (Abstract, Clouston, Mental Diseases, p. 393.)

GENERAL PARESIS WITH CONVULSIONS. A DESCRIPTION OF THE EPILEPTIFORM SEIZURE.

J. F., seized with convulsions which occur every ten or fifteen minutes, are identical with epileptic seizures, except that the convulsions are chiefly unilateral, involve the chest muscles but slightly; no lividity of face or obstructed breathing; each attack lasts for about thirty seconds. The convulsive phenomena in their sequent stages were as follows: (1) No pallor, but head and eyes deviate to right, a broken inarticulate cry, pupils dilate widely, brow is raised; (2) mouth drawn to right, lips twitch strongly and

uncover the canines; (3) right arm flexed, with forefinger extended, then raised and convulsively jerked at shoulder, brow twitches violently; (4) in certain seizures, the discharge spread to right leg also, but did not involve the left. After the fit, there was paralytic deviation of head and eyes to the left, and helplessness of right arm, left pupil large, but slowly regained former size, champing movements of the jaw, no exaggeration of patella reflex, no ankle clonus. At the onset of each attack, the heart, previously beating strongly, became imperceptible during the tonic stage. The cry always precedes each attack. (Abstract, Lewis, *op. cit.*, p. 295.)

### A CASE WITH EPILEPTIFORM SEIZURES. RAPID COURSE.

John W., æt. 45, first symptoms, restlessness at night, which is a frequent first warning, epileptiform fits followed. Sexual desire very strong but could not be gratified. Naturally temperate and careful of money. Slight accident to left foot two years previously. Tabetic gait, weaker on left side; grip jerky and spasmodic in left hand; speech slow, interrupted and slurred; absence of tendon reflex; left eye blind from injury. Died a year after admission. (Abstract, Campbell Clark, *op. cit.*, p. 221.)

### A CASE OF GENERAL PARESIS OF THE CONVULSIVE FORM.

G. E., æt. 40. He was of an excitable disposition; he has led a dissipated life in regard to drink and women; of a fiery temper; he had had syphilis, and much mental excitement. He had complained for some time of severe headache, and insomnia; he was unusually irritable, and not fit to do a day's business. One day he suddenly fell down in a fit, and remained in general and severe convulsions with complete unconsciousness for about two hours and died in them. After death there were all the pathological signs of general paralysis, especially the adherence of the pia to the

convolutions of the vertex. There was no localized disease of the membranes or vessels that was recognized as syphilitic and he had not been drinking heavily before his death. (Abstract, Clouston, *op. cit.*, p. 392.)

**Unilateral Twitching.**—Limited or unilateral twitching of the muscles of the face or of certain groups of muscles, such as those of the hand, or of the thumb and fingers is not infrequent. These convulsive jerks are usually of short duration, but they are sometimes prolonged over hours, or even days. The rhythmic jerks may be on both sides but generally they are unilateral.

#### A CASE OF GENERAL PARESIS WITH MARKED TWITCHINGS.

G. C. D. had intense irritability and continual mental excitement lasting for many months, together with jerking of the limbs; especially of the arms, so that the attempt to perform any purposive action would cause them to be jerked violently about, rendering the efforts quite futile. When sitting quietly, a touch on the arm would set both violently jerking, and sometimes, there would be ceaseless twitching of the arms and legs all day. (Abstract, Turner, John, Journal Mental Science, Vol. 35, p. 343.)

#### A CASE MARKED BY CONVULSIVE TWITCHING.

J. S., general paralytic, was seized with convulsive twitchings of the limbs; face was flushed and skin covered with a greasy unctuous sweat. Both arms, especially the left, continually and consentaneously jerked by the convulsive twitching of the extensor group of the elbow and wrist; the fingers of the left hand are suddenly spread as in the act of playing the pianoforte; the toes show a tendency to "spread," the feet being rigidly extended, while there is also continuous clonus of both ankles, especially increased by flexion of the foot; if, during a period of partial cessation of this clonic state, the sole be irritated by a pin, clonus is again briskly established. There is a notable degree of the "paradoxical contraction." The superficial

abdominal reflexes are dulled. *Tache cerebrale* is rapidly produced and is vivid over all parts of the body. Both conjunctivæ are injected, both pupils show mydriasis but the left is larger, both are fixed to a bright beam of light. Bowels and bladder paralyzed. The patient was greatly demented and quite mute. The next day twitching was limited to left foot and hand, and there was the same expansive movement of the digits. Five days later, convulsive twitching of left hand and foot was unchanged, and plantar reflex greatly exaggerated and hypersensitive. Five months later, the above movements have continued to date, but are gradually declining. (Abstract, Lewis, *op. cit.*, p. 296.)

A CASE OF GENERAL PARESIS IN WHICH PROTRUSION OF TONGUE PRODUCED FACIAL SPASMS.

A patient with general paresis could not protrude his tongue without inducing violent left facial spasms, the tonic twitchings being associated with much vaso-motor paresis. (Abstract, Lewis, *op. cit.*, p. 291.)

**Eye Symptoms.** — The ocular changes, occurring during the course of paresis, are numerous and varied. None of them is found in all cases; nor are they essentially a part of the disease, but some one, at least, is present, as a rule.

Most prominent, and manifest to the superficial observer, is the alteration in the general expression of the eye. This, when found, is pathognomonic. It is difficult to express the change in words, but its salient characteristic is a lack of vivacity and a dull, lifeless appearance of the cornea.

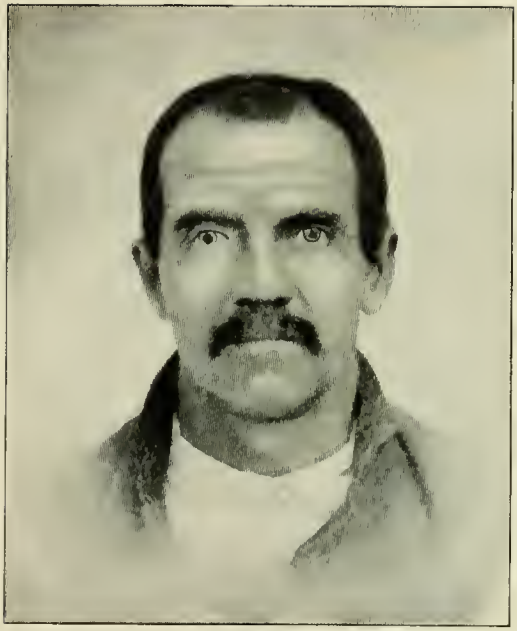
The important symptoms, however, are those due to changed conditions of the oculo-motor apparatus. In a small number of cases the extrinsic muscles will be found affected, giving rise to the various forms of strabismus, ptosis, or even nystagmus. On the other

hand, in the great majority of cases, the intrinsic muscles, governing the size of the pupil and the movements of the iris, are in some way involved.

Frequently there is found an extremely myotic condition of one or both pupils, known as the pin-point pupil, being due to a spastic condition of the muscle fibers of the iris, which govern contraction. Associated with this small pupil, there is complete absence of movement of the iris upon exposure to light, nor does the pupil dilate when the eye is shaded. This condition is said by many authors to be a characteristic of the earlier stage of the disease, but it may and frequently does persist throughout the entire illness. This contracted pupil is also found in locomotor ataxia and other spinal affections and it is always seen in paretics of the tabetic class. It may be unilateral, giving rise to a decided inequality of the pupils, which is due to an accompanying paralysis of the dilator fibers in the other iris. Of course all local inflammations and changes, otherwise causing this condition, should be rigidly excluded.

A widely mydriatic pupil, due to paralysis of the sphincter muscles, unilateral, or on both sides, is more frequently found in the later stages of the disease, but may occur at any part of its course. Various irregularities in the shape of the pupil, also, are seen. It is to be remembered that adhesions and local causes should be sharply differentiated.

Among the anomalies of the various ocular reflexes the absence of the sympathetic dilatation, following irritation of the skin at the side of the neck, is the one earliest observed and it is one that is most commonly found. In nearly fifty per cent. of all cases there is a disappearance of the consensual reflexes, always in connection with the impairment of the light reflex. Reflex iridoplegia, or the Argyll-



RIGHT IRIDOPLEGIA (DILATATION OF RIGHT PUPIL). (Mills.)

Robertson pupil, is often present, and if noted in the early stages of paresis is, as in tabes, a very important symptom. There may be a complete absence of response to all efforts at accommodation, as well as to stimulation by light, including the failure to react to movements of divergence and convergence.

As was before stated, any or all of these conditions may be found at some stage of the disease, while none are necessarily present. The dilated pupil is more often found than the abnormally contracted one. The light reflex is, in many cases, entirely lacking and at least a noticeably sluggish reaction is found in almost all cases. The movements of the iris, during efforts at accommodation, are affected, as a rule, in the latest stages of the disease, while in a large number of cases there is a perfectly normal response.

These changes are apt to affect the two pupils in a varying degree, or they may be found only in one, the other approaching the normal, so that in the great majority of cases a decided difference in the degree of response to stimulus is observed. The pupils are not only often unequal in size and irregular in contour, but these irregularities vary considerably at different times, a dilated pupil in the morning becoming a contracted one later in the day. So, too, the irregularity of contour may change from one pupil to the other, if not constant in both.

There is sometimes a progressive failure of the power of vision, either partial as for colors or distances, or general and entire, from involvement of the optic nerve. Atrophy of the optic nerve has been observed among the early manifestations of paresis and the failure of vision has sometimes been a premonitory symptom of the disease, occurring several months or years before any of the more definite and characteristic signs.

Distinct optic neuritis is not commonly found, the changes being due to a dimness of outline of the disc and a fullness of the blood-vessels. As a rule, the vision of the patient is not markedly affected by this condition, and where there is a decided failure of sight, there are usually associated with this condition, lesions of a tabetic or lateral sclerotic nature and the accompanying symptoms.

GENERAL PARESIS BEGINNING WITH RETINAL DISEASE.

G. B., having exposed his head to the hot sun while bathing, had hemorrhage into both retinæ, causing complete blindness. After a few years, he fell into general paralysis and when he died, the author found that the optic nerves were hard gray cords, with no nerve substance left, and the optic tracts in the same condition. The gray sclerotic condition could be traced to the corpora quadrigemina, the posterior of which were gray and sclerotic. (Abstract, Clouston, *op. cit.*, p. 398.)

THREE CASES OF GENERAL PARESIS BEGINNING WITH OPTIC ATROPHY.

Case 1. In a man, aged 37, who had had syphilis, the first symptom of illness was sudden loss of vision. The left pupil was dilated and the knee-jerk absent. Vision soon returned, but the pupil remained dilated. There was some diplopia and central vision only was retained. In four or five months, vision failed again, this time completely. Afterwards he developed characteristic symptoms of tabes and later all the phenomena of general paralysis. He died six years after the occurrence of the ocular symptoms.

Case 2. A man, æt. 36, first noted a sensation like the pricking of needles in the right side of the face with a sudden clouding over of the eyes, and a great deal of vertigo. He saw black spots and bright flashes before his eyes. There was a peripheral limitation of the visual

field for form and a more marked limitation for color. There was no change in the eye-grounds. The general health was good, but sight finally was lost. Symptoms of general paralysis followed. Death occurred nine years after the beginning of the ocular symptoms.

Case 3. A man, æt. 45, with a history of syphilis, first noticed blurring when he tried to read, worse in the left eye. Vision failed rapidly; in six months he could not recognize people. On examination, the upper part of the field was apparently cut off and contracted. The discs were bluish. In the right eye, there was a narrow partial zone and some little pigmentary change. There was some cortical opacity of the right lens. About the time that the eyes began to fail, the man noticed his legs were growing weak and gradually typical symptoms of general paralysis appeared. A later examination showed a typical gray atrophy of the optic nerve. The knee-jerk was absent; the gait tottering rather than ataxic. He could stand still with his eyes shut. (Abstract, Knapp, Philadelphia Medical Journal, Vol. 1, p. 80.)

### GENERAL PARESIS WITH OPTIC NERVE ATROPHY.

John M., æt. 38, admitted with general paresis and blind; an ophthalmoscopic examination showed well-marked gray atrophy of both optic discs, but the vessels were not diminished in size. (Abstract, Wiglesworth, Journal of Mental Science, Vol. 35, p. 389.)

### GENERAL PARESIS WITH OPTIC NERVE ATROPHY.

A woman, æt. 26, admitted with violent mania approaching the acute delirious type and for a time placed her in danger; no reason for suspecting general paresis till an ophthalmoscopic examination disclosed complete white atrophy of the optic discs. This led to diagnosis of general paresis which subsequently proved correct. (Abstract, Wiglesworth, *loc. cit.*, p. 390.)

GENERAL PARESIS BEGINNING WITH CONGESTION OF THE OPTIC DISCS.

A case of doubtful diagnosis, no history of syphilis, decided diminution of the reflexes. The general congestion of the optic discs led to an ophthalmoscopic examination of the discs with the result that they were found to be somewhat blurred. A few months after admission he showed marked exalted delusions and in two years he died. During the whole course of the disease, he had congested conjunctivæ with blurred discs. (Abstract, Finegan, Journal of Mental Science, Vol. 55, p. 620.)

GENERAL PARESIS BEGINNING WITH CONGESTION OF THE OPTIC DISCS.

The patient's earliest delusions arose from failing vision. He thought that moss, cobwebs, nets, etc., were constantly falling before his eyes. Subsequently he became suspicious and said that the oculist had put out his eyes. Later, other organized persecutory delusions appeared and led to repeated attempts at suicide. There was a distinct history of syphilis. (Abstract, Dawson and Rambaut, Journal of Mental Science, Vol. 55, p. 621.)

SYPHILIS, PTOSIS, EXTERNAL STRABISMUS, FOLLOWED BY SYMPTOMS OF GENERAL PARESIS.

Walter W., married; agent; uncle insane. He had syphilis long ago. He has recently been treated for ptosis and external strabismus, and recovered entirely. He remained well for a few months and then became changed in character; he became irritable and exacting and careless in business. He was sleepless, restless and extravagant a month before admission. On admission, he was a splendidly built man, very restless, constantly writing letters; he had the greatest ideas of his capacity; played the piano constantly with great vigor; he was irritable. Tongue clear, fairly steady; pupils unequal, right the larger; reflexes deficient; writing tremulous; speech hesi-

tant. He remained in a restless excited state for nearly a year, when he gave up writing and became weaker in every way. Facial and lingual tremors became more marked; he became self-negligent and at times wet and dirty. His memory failed and he is rapidly passing into a demented state. (Abstract, Savage.)

AN INTERESTING CASE OF GENERAL PARESIS PRECEDED BY TYPICAL ATAXY. BECAME BOTH BLIND AND DEAF WITH SYMPTOMS OF BULBAR PARALYSIS.

R. M., married, æt. 47, merchant, no insane relatives, mother died asthmatic; no known cause for the illness. First symptoms, he refused to see people, and threatened to drown himself. He had increasing difficulty in expressing his ideas, became altered in manner, and his memory failed; he had a habit of letting his saliva run from his mouth. Before admission, he became reckless in business and emotional, especially at night, when he would bellow for hours together. On admission, he thought everyone was against him, refused food, had exaltation of ideas, thickness of speech and ataxic walk, which had been present over a year. Two months after, he was more shaky on his legs, and optic discs were partly atrophied; later, he had a slight attack of faintness, followed by slight loss of power in left thigh; patella reflex was absent. At end of a year both discs were markedly atrophic, deafness was noted. Although feeble, he was restless. In the latter part of this year he had a fit and from that time lost power rapidly; after the fit he was unconscious; tongue dry and brown, pulse 74, axillary temperature 98°; surface temperature of forehead, right side, 93°.8, left, 94°.6; twitching of the right side; inability to swallow; left pupil large, both pupils insensible to light; the patient died. (Abstract, Savage, on Insanity, p. 317.)

ILLUSTRATIVE OF CHANGES IN PUPILS.

In this patient the pupils are unequal during some portion of every day, and the pupil which is the most dilated during

the morning frequently becomes the smallest in the afternoon. Both pupils react sluggishly to the sunlight. The edges of the left pupil become irregular so that the two sides do not appear exactly alike nor conform to the normal outline. In two other cases, the so-called pinhole pupil was present during a portion of the pronounced period, one of which (cases) at the same time experienced periods of great excitement. (Abstract, Stearns, *op. cit.*, p. 496.)

## CHAPTER XII.

### PARTICULAR SYMPTOMATOLOGY (*continued*).

**Sleep.**—Insomnia is one of the earliest disturbances of the disease, but usually it is not looked upon with anxiety by the patient. Frequently there is drowsiness through the day, or a tendency to sleep after eating. The nights are passed in much sleeplessness, or the sleep is light and not invigorating, troubled by dreams, or nightmares or startings.

In some cases there is found a special type of respiration occurring in sleep. It is carried on by short inspirations that hardly raise the chest walls and there are frequent long and plaintive expirations. This mode of breathing is found at times in all stages of the disease.

**Pains.**—The patient complains very frequently in the prodromal stage of sharp pains like neuralgia, or sharp rheumatic pains in the limbs, and sometimes through the body. Usually they are not localized, and for that reason seem to the patient the more unaccountable. At times, or in some cases, the pain may be localized, but comes and goes, causing the most intense agony for the time. It may continue as a neuralgic pain in the head, or in some part of the body, and attacks of hyperesthesia of parts sometimes cause intense suffering. The pains are described as sharp, lancinating, or flashing, and frequently are but momentary. Occasionally girdle pains are complained of, and sometimes, also, an intense burning pain over a certain spot on the knee or foot.

These pains usually disappear as the disease makes its true motive apparent.

**Headache.** — Among the prodromal symptoms is headache. The headache is sometimes neuralgic in character, at other times accompanied by tenderness, or feeling of lightness in the head (Shaw).

Severe frontal headache is present in almost all cases suffering from the tabetic form; and the patient frequently rubs the hair from the frontal region, or from one entire side of the head in his attempt to rid himself of the constant pain; or he may knock his head against the wall in his desire for relief. In all forms the headache disappears as the disease advances. Precedent migraine, says Mickle, often disappears at the development of general paresis.

**Sensory Disturbances.** — Sooner or later in the disease, later, according to Clouston, there is loss of special sensations and impairment of the cutaneous sensibilities. The latter are noticeable in very definite regions. Macpherson states, "As a rule, they are most pronounced in the following order: on the chest in front, in the lower limbs, the upper limbs, and the face and hands." This applies both to thermal sense and the loss of feeling of pain. A curious symptom noted by Giannone is that of analgesia of the ulnar nerve. This author states that if the ulnar nerve be pressed upon as it passes over the groove in the humerus, the arm in the flexed position, it will be found, pain is absent in 53 per cent. of the cases and diminished in 25 per cent.

In addition to the anesthesia of the skin, loss of special senses occurs. That of the eye has already been considered in detail. Deafness, aphonia, loss of control of the muscles of deglutition, are all frequent sensory disturbances. Not infrequently the patient may strangle from a bolus of food, or a stomach tube may reach the trachea or bronchi without any sign on the part of the patient. The sense of

taste may become so deranged that the patient cannot distinguish between substances placed in the mouth; and the olfactory sense, also, may be so deficient that no odor however bad gives annoyance, or is noticed by him. This loss of sensation is progressive, and is believed by Clouston to be due to primary degeneration in the cortical centers of special sense and their terminal nerve apparatus. As already noted under the ocular symptoms, visual imperfections, color-blindness, or visual hyperesthesia may be present.

### TWO CASES OF GENERAL PARESIS IN WHICH THERE WAS BLOOD SWEATING.

Severes describes two cases of general paresis in the latter stages of which blood sweating about the face was observed. They were cases of long standing, in which the power of articulation was almost lost and muscular paralysis complete. There was observed a great multitude of coagulated blood drops about the face. After being wiped away, other drops appeared in about two hours, appearing as though the face had been picked all over with a fine needle. At the same time, the temperature of the head was increased, pulse 120 and weak. After two days this curious symptom disappeared, leaving rose-colored spots where the sweating had been most extensive. (Abstract, American Journal of Insanity, Vol. 20, p. 356.)

### GENERAL PARESIS WITH SENSORY PERVERSIONS.

A patient believed that his skin was tucked in, another that it was hung up to dry, another was continually picking off "gold leaf" from his bodily surface. (Abstract, Spitzka, on Insanity, p. 202.)

### A CASE OF GENERAL PARESIS IN WHICH THE KINESTHETIC SENSE WAS LOST.

A patient had conducted a large business and had accumulated considerable property. Yet after his ad-

mission, he never referred to the past or inquired for his friends. When his relatives called to see him, he replied to their inquiries at times correctly and at others incorrectly. He never expressed pleasure or displeasure at their visits or requested them to come again. He never wrote or took interest in letters written to him. He was accustomed to spend the time looking out of the window, or walking up and down the hall. Two or three months after admission, he lost his personal identity and insisted that he should be called Johnson. After a residence of sixteen months, during which he never expressed a regret or pleasure, he had an epileptiform seizure from the effect of which he did not recover. This case was unusual in the almost total absence of emotional expression or desire. (Abstract, Stearns, Mental Diseases, p. 488.)

A CASE OF PARESIS WITH MARKED SENSORY SYMPTOMS.

In this case, affection of sight from optic atrophy was among the earliest symptoms of the disease. Three months before admission the patient had consulted Dr. Swanzy at the National Eye and Ear Infirmary who found optic atrophy, also Argyll-Robertson pupil and at times slight affection of speech and he diagnosed general paralysis. The ocular lesions determined the form of the delusions. In the earlier stages he saw spiders, white skeletons, moving objects, crabs and different colored mosses, later he complained of fluff, flies and worms being thrown into his eyes and then of buildings being erected at the back of his eyes, which blocked out his vision. He was depressed and suspicious. There was no history of syphilis or alcoholism. (Abstract, Dawson & Rambaut, Journal of Mental Science, Vol. 45, p. 620.)

A CASE OF GENERAL PARESIS WITH MARKED SENSORY SYMPTOMS.

P. T., æt. 36, army pensioner. History of syphilis and sexual excess; he has two healthy children. Two years ago the patient began to suffer with convulsions, treated as idiopathic epilepsy. He was admitted in February, then he

had slight tongue tremor and flattening of face, articulatory slurring, and very exaggerated patellar reflex; pupillary reactions and fundus oculi were normal, also common and special sensibility. He had mild exaltation but no delusion. There was no change till April, when he had several attacks of petit mal, preceded by darting pains in the legs, and followed by a temporary accentuation of the physical signs. With the onset of these attacks optimism disappeared and he had persecutory ideas, attributing his sufferings to drugs in his food, etc. When the attack passed off the exaltation returned and it was more marked; God had touched and cured him, etc. In May, a more severe congestive attack was succeeded by temporary aphasia and right brachial paresis, the mental state being depressed. A remission of mental and physical symptoms followed this until September, when another similar attack occurred, with no sensory disturbances except the darting pains at the outset. Near the end of November, he had a severe congestive seizure, preceded by intense darting pains and leaving a condition of left hemiparesis, also a mental state of panic terror; he seized the paretic arm with the sound hand and shrieked, "Take it away, the big serpent is biting me." Furor was too great to allow observation of sensory condition. This excitement subsided after some hours and the paretic symptoms passed off, leaving patient very dull and confused; he said a big serpent had bitten him on left side, but God had saved him because of his holiness. Sensibility to pain and touch were not lessened on left side. On December 9th there was a revival of the furor with the former delusion, but without motor paralysis. On December 25th another congestive attack was followed by left hemiplegia and hemianesthesia; patient was happy, fondled affected arm, calling it the little son that God had brought to him. In a day or two localized motor and sensory paralysis passed off, but dementia became profound. The patient died of cardiac paralysis in January following. (Abstract, Sullivan, W. C.)

**Trophic Changes.**—One of the most interesting conditions, prevailing in the later stage of the disease,

is the trophic changes. These are numerous and varied, and for the most part are real trophoneuroses. For instance the tendency to sacral decubitus is due not to the wet habit alone, but to a certain degree of trophic trouble which is always present.

Other changes to be expected at times are the loss of teeth and nails, the latter becoming extremely brittle and fissured. The hair likewise suffers: it gets dark, brittle, and scant and occasionally it becomes almost white. The knees, elbows, and other points of the body, are prone to ulceration, even though there be but the weight of very light bedclothing, such as a sheet. These regions, as well as large areas of the skin, occasionally break down and slough, from no other cause than trophic alteration. Abscesses, erythematous eruptions, perforating ulcers of the foot, have been described, due to the same cause.

Progressive muscular atrophy is not uncommon. This may take the pseudo-hypertrophic form and the muscles seem to increase in size, because of the fatty infiltration and subsequent deposit (with wasting) of fibrous tissue.

The bones likewise suffer, becoming infiltrated with fat, which is deposited in the Haversian canals. This is associated with progressive increase in the amount of organic and a consequent decrease in the amount of inorganic material. This process may go on to such an extent that the bones become very brittle, a condition closely approaching osteomalacia, and fracture of them is then a very simple matter. Trophic changes in the joints, as well as of the bones, occur at times. These arthropathies are similar to those found in locomotor ataxia and like them are found in cases of the "ascending type" of paresis, in which the spinal precede the cerebral symptoms,

and so doubtless depend upon lesions of the spinal cord. An interesting case, involving both hip joints, was seen recently at the Philadelphia Hospital in a paretic. The sternum and ribs may become firmly united by reason of ossification of the cartilages. The thorax thereby becomes a rigid case, and breathing is only successfully accomplished by bringing into use the accessory muscles of respiration. Macpherson calls attention to the fact that incurving with elongation and ossification of the xyphoid portion of the sternum is quite apt to cause much pain and annoyance to the patient in breathing.

FIG. 2.

ARTHROPATHY OF KNEE JOINT. (*A. S. Roberts*, vide *Dana*.)

Among other trophic changes may be noted the absence of the general healthy appearance of the skin. A diminution of the hemoglobin, giving a color index varying from 0.5 to .85 of the normal and a lower number of red corpuscles, are constantly to be observed. Herpes zoster and furunculosis, faintly indicated at first, may become so serious as to endanger the life of the patient. Hematoma of lower bowel, diarrhea and gastric hemorrhage may supervene. Hematoma of the ear, another trophic change, is treated under separate head.

GENERAL PARESIS WITH ARTHROPATHY OF KNEE JOINTS.

J. D., æt. 38; white, admitted in July. He had suffered for some years with pain in the legs, which had been called rheumatic. Otherwise he was healthy up to a year and a half before admission when he had a swelling of

the knees. Six months before admission, he began to have persecutory delusions; he became silly and weak. Drawling speech began three months before admission. There had been no convulsions, or history of syphilis. On admission he was very demented. Both knee joints were enormously enlarged; grating sounds could be heard in them easily. The anterior end of the condyles of the femur was enlarged. Shortly after admission, he had a maniacal episode. After this, he showed a grandiose delusional state; he was more demented; he talked incoherently about finding immense sums of money. His speech became more drawling and unsteady. He managed to walk about, but the joints grew more deformed. The patellæ were flattened, disfigured, and increased in diameter; the bosses on the condyles were very prominent; no stalactites could be determined; grating sounds could always be heard; the joints were painless and free from heat or redness; there was increase of fluid within them; no edema about them but the skin felt hard and tough; there was increased lateral movement. Very strong electrical currents failed to cause contractions in the muscles of the thighs and legs, except in the peroneal group of the right leg. He died of edema of the lungs.

The post-mortem findings of the knee joints are given. The right joint was as follows: The synovic membrane in front was of a steel-gray color, mottled with blue patches and covered with numerous small miliary calcareous nodules. The anterior edges of the condyles of the femur were greatly hypertrophied in nodular masses or rugosities. These formed bosses extending upwards and outwards about two centimeters beyond the edge of the condyle. In the anterior notch between the condyles was a triangular mass of nodules embedded in tissue and freely movable. These nodules were of stony hardness. Over the articular surface of the right condyle there was left the lining membrane of the joint considerably thickened and rough in some places, in others thin, and presenting about the center an eroded patch. Over the surface of the left condyle, the lining membrane was absent, and the bone

was worn and eroded, especially toward the periphery. There was a series of small eroded patches with nodules running along the outer border to the posterior extremity of the condyle. In brief, most of the soft structures of the joint showed destructive changes. The semilunar cartilages were much worn and eroded, and easily displaced. The inner surface of the capsular ligament showed some pedunculated masses. The crucial ligaments were apparently wasted, but still held firmly. The end of the tibia was covered with thin, worn and eroded membrane; part of the surface of the bone was bare. The joint contained a green, thick, opaque fluid. The patella was quite deformed. It was thin and flattened, with rugous edges. The under surface was covered with shreds of membrane. The capsular ligament was much distended and the joint cavity extended to an abnormal limit upon the front of the femur. The left knee joint was rather larger and more distended than the right. The same general characteristics were to be noted—distended capsule, eroded membranes, nodular pedunculated formations, and bony bosses on the anterior edges of the condyles. (Abstract, Lloyd, J. H., Journal of Nervous and Mental Diseases, Vol. 18, p. 83.)

### A CASE OF GENERAL PARESIS SUPERVENING ON TABES DORSALIS, MARKED TROPHIC DISTURBANCES.

C., æt. 37, male, married for six years, one child, five years old; phthisis on both sides of the family; his father had died of diabetes, his brothers were intemperate. He had been a medical student, drifting on for years without obtaining a qualification and had led a fast life. He was suspected of syphilis but denies it; of late he has been temperate. Six years ago he received a blow on the head and neck and since then has been a changed man. Soon after he got married, sexual vigor much diminished. His marriage involved him in pecuniary worry, to which he was unaccustomed; felt depressed; lightning pains in the limbs; six to eight weeks before admission, seized with agonizing pains down his back. Similar attack affecting head a week later. A year ago he had become captious, irritable

and unlike himself; more recently he had been depressed, hysterical and high spirited by turns and occasionally violent. Exaltation appeared a month before admission. On admission, June 18, he was anemic and cachectic; pupils contracted and sluggish, the left slightly; the larger patellar reflexes absent; with feet together and eyes shut, a little disposition to totter; pains down his legs, which he said had lasted on and off since his accident six years ago, also a sense of abdominal constriction of recent origin. Said he was passing water with a less forcible stream and that there was dullness of sensation on both ulnar regions, but no anesthesia was detected on testing. His complaints too, as to defective eyesight seemed unfounded. No heat, pain or tenderness over scalp or spine. Articulation distinct, skin greasy. Temperature normal, urine neutral, sleep and appetite good. He was exalted and jolly; said he would do great good to the patients around him almost involuntarily, by the magnetic power which he felt permeating his whole system; said he had made his fortune in a day, that he was going to stand for Parliament, etc.; his handwriting was unintelligible, due to misspellings, omitted words, etc.; memory was so bad that he misstated his age by ten years. He was clean, stuck a feather in his hat and fraternized with the most demented patients and was fanciful and hysterical. The case seemed to be one of general paresis supervening on tabes dorsalis. For first twenty-four hours he spoke only in a whisper, but the uninterrupted current applied to the outside of the larynx, restored his full voice, to his great delight. General health improved, but he lost physical power. There were many grandiose delusions and much emotional instability. After eight months, he complained greatly of weakness and often fell down in dancing. Twelve months from admission he had two slight convulsive seizures, chiefly affecting the right side, followed in two weeks by frantic, destructive mania. Physical degeneration set in, catheter often needed; he had albuminuria. Cellulitis appeared in both feet and spread, on which treatment made no impression. In a short time, the muscles of the legs were almost in ribbons and every

part of his body exposed to pressure assumed an inflammatory tint which deepened rapidly into a slough. The mania left great exhaustion, unaffected by stimulants. His physical condition hourly degenerated and no one thought he could live another day. His friends, not wishing him to die in an asylum, had him removed in a carriage, one mass of mortifying corruption. From that time he began to mend and was soon well in body but somewhat silly in mind. (Extract, Fox, B. B., Journal of Mental Science, Vol. 37, p. 394.)

GANGRENE OF THE LIP IN A PARETIC, FROM SUCTION.

A man in the last stage of general paresis was discovered holding his lower lip firmly between his teeth; he had not held it there over four and a half hours. The lip was swollen, discolored and black in places. The greater part of the lip sloughed away; the wound healing without difficulty. (Abstract, Arch. de Neurol., Sept., 1892.)

A CASE OF GENERAL PARESIS IN WHICH MARKED IMPROVEMENT OCCURRED AFTER EXTENSIVE SLOUGHS.

Male, æt. 37; lawyer; no insane heredity; no history of syphilis. He used tobacco excessively and had been licentious; disposition genial; temperament sanguine. He was an able attorney and was moderately successful financially. On admission, he had been breaking down for a year, but had made a show of practicing his profession up to within a few weeks. He first showed inordinate sexual desire and extravagant delusions. Shortly before admission, he became violent. He believed he could make gold and diamonds and that he had been commanded to "raise Jesus and to be a Joseph." On admission, he was anemic and untidy; temperature was normal; pulse 96, small, irregular and feeble; bodily health apparently reduced, though he was as well as for several months before; pupils equal and contracted; speech drawling and thick; gait ataxic. He entertained impracticable business schemes of great magnitude. His manner was dull and preoccu-

pied and his expression indicated mental impairment. He remained bewildered several days after admission; he was inclined to lie down, pound on doors, injure furniture and remove his clothes. A few weeks after admission, July 24, he is still restless. August 4, he is less confused and quieter, and has a ravenous appetite. He says he has a great invention for tubular locomotion, consisting of two glass balls. One ball is fastened to a pole; the other is "a solid globe, with the exception of four little holes for the admission of air and water where the friction occurs." The "capacity" of this apparatus is one thousand miles a minute. His conversation is incoherent and he speaks of going "to the end of the universe at the end of a spark." During the passage of the electrical current through the negative pole in the auriculo-maxillary fossa to the vertex, he complained of haziness of vision, as though he were looking through steam. After two electrizations, his pupils were a trifle larger, and his skin cooler. August 15, tendon reflex cannot be obtained owing to muscular rigidity; tongue deviates to the right and is coated; pulse 90 and somewhat feeble; skin cool and pupils contracted; temperature 98°.5; mental action more feeble; he cannot follow the simplest directions. August 27, he has steadily lost ground; very noisy and mischievous and greatly disturbed at night. September, he is prone to remove all his clothing; believes he is Jesus Christ; no decline in bodily health. October 1, he has had retention of urine recently. On the second he had a mild paretic attack. He became pale, weak, and momentarily unconscious. On the third he had an inflamed testicle; he took food poorly and was feeble. Fifth, cystitis developed; much muco-pus in the urine. Seventh, he is very low and does not take food well; pulse weak and rapid; he passes all his urine in bed and is in a wretched condition. Tenth, he is much better and takes food well. The orchitis is subsiding, no abdominal tenderness; says he is in perfect health and is taking solid food. Fourteenth, his urine is intensely alkaline, contains pus and is of a horrible odor. From the six-

teenth to the twenty-first he was in a highly critical condition. An abscess formed in the right side of the scrotum; there was constant dribbling of urine; genitals and thighs were excoriated. Twenty-fourth, there is a constant discharge of pus and induration of the testicle; dribbling of urine continues; he has a bed-sore over the sacrum which developed very rapidly. Until November, he seemed to have acute pain in the back, although he said he felt none; he took very little solid food and required constant attention; his bed-sore became very large and he constantly lost ground physically. November 1, he requires the utmost personal attention and is slowly failing. The bed-sore is becoming deeper. Death at an early date is apprehended. Fifth, the destructive crisis has been arrested. The slough has separated, except in the center. A portion shows suppurative action. Eighteenth, bed-sore better; general health improved but not his personal habits. January following: He is more quiet and less irritable; appetite good; is gaining flesh; bed-sore no larger than a silver dollar; he is able to sit up and take his meals in the dining room; gait feeble. Thirtieth, he reads much and is glad to be out of bed. April 3, he steadily improves; quiet, orderly, and usually pleasant; he does not appreciate his past or present mental condition and often asks to be examined and sent home; he has no extravagant delusions; he addresses an envelope in a business-like style. May 18, he sits quietly in a room by himself; he is given to gesticulating. Nineteenth, he converses coherently; his statements are plausible; no difficulty in articulation; he can stand erect with his eyes shut and shows little ataxia; he executes fine movements with considerable precision. June 3, removed from the hospital on trial. March of the next year, he has tried to practice law, but could not accomplish much. He was reported as having seemed "out of balance." He has made himself a great annoyance in the courts by issuing fictitious papers and instituting law suits against one person and another. He also insisted upon his right to address the court in season and out of season. On his return, he was irritable and spoke

to no one. He remained for about a fortnight moody and preoccupied, talking little and taking a very small quantity of food. May 21, he converses but little but scolds the superintendent for his detention, and uses profane language. He sits alone with bowed head and does not speak. November 8, he is at times menacing and threatening; he spends much time in writing and is cross when asked to exhibit his manuscript. December 14, a table knife is found on his person. He replies evasively when questioned as to what he purposed doing with it. March following, his bodily health is as good as at any time since his return. He is pleasant unless annoyed but denounces the officers for his detention. His clumsiness of articulation may be natural and it is not thick and indistinct. He shows no incoördination of muscular movement and takes long walks daily; he will not let the physician examine him; pulse 98; he can walk backwards and forward with closed eyes, and does it easily. His printing and writing are distinct. (Abstract, Burr, C. B., American Journal of Neurology and Psychology, 1884.)

**Bones.** — Fractures of bones are found more frequently in general paresis than in any other form of insanity. The long bones, as well as the ribs, sometimes become very brittle, due to the absorption of the organic constituents; while the impairment of nerve force leaves the patient deprived of the reflex guard to protect him from danger. Lacking judgment to protect himself, he is usually liable to serious accidents of this nature. Not only is there delayed reaction, in dulled reflex movement, but frequently an absence of sensitiveness to pain, so that severe fractures may occur without a sign of suffering. Again, spontaneous fractures have been known; but not infrequently do the fractures of paretics unite naturally, and bed-sores and abscesses heal rapidly.

Clouston, in accounting for the fact that the largest number of rib fractures in asylum practice is in cases

SPONTANEOUS FRACTURES AND ARTHROPATHIC DISINTEGRATIONS.
(Charcot per Church-Peterson.)

of paresis, states that, when the chest is struck, or the weight of another patient or of an attendant is thrown on it, the laryngeal muscles do not act in time to close the lungs and make them resistive, by being filled with air that cannot be driven out. He gives an instance of a patient admitted with nine ribs broken on one side and four on the other, and in spite of such injury he shouted, fought and rushed about wildly, regardless of anything like inconvenience, and with an absence of ordinary feeling, showing clearly a condition of dulness of sensation; and concludes that this very dulness of sensibility is at the foundation of these fractures.

It is in the second stage, when the patient is free and unprotected, that accidents and resulting fractures often occur. Sankey says that too frequently fractures are explained to the detriment of the attendant, and advises asylum physicians to be especially watchful for this complication in the examination for admission. He adds the case of "Leather-Coated Jack," who, reinforcing his ribs by the erection of the intercostal muscles, would allow a cart to be driven over his chest, and shows that a general paretic has no such forethought, and even if he had, the reflex movements would be too slow in their action to be of avail.

A CASE OF GENERAL PARESIS IN WHICH MUSCULAR ACTION CAUSED FRACTURE OF LEG.

A male with general paresis, æt. 42, in asylum for over two years; paresis due to specific disease, and he had been out of health for two years before admission. Ataxia was a prominent feature; gait clumsy and uncertain; pupils sluggish, tendon reflex absent; he was extremely apprehensive with extravagant delusions; mental excitement of a furious and purposeless character. Afterwards he was in a quiescent stage when one day, while out walking, he

attempted to turn and fell and broke the tibia and fibula in the lower third of his leg. The fracture united promptly and convalescence went on uninterruptedly. (Abstract, Burr, C. B., American Journal of Insanity, Vol. 46, p. 75.)

A CASE OF GENERAL PARESIS IN WHICH MUSCULAR ACTION CAUSED FRACTURE OF LEG.

A female, æt. 34. The patient had been suffering in mind five months before admission. She had a paretic seizure six weeks after admission. She was noticed to be ataxic, and had difficulty in rising from her chair. The pain and ataxia in the legs were soon followed by incoördination in the movements of the arms; she had difficulty in feeding herself; she had frequent severe headaches and muscular incoördination was not noticeable at these times. In the following month she was more confused and destructive of clothing; ataxia increased and mental powers rapidly failed. In the February following admission, she showed inequality of pupils, and then had a second paretic seizure, with difficulty of respiration, high temperature and choreiform movements. On April 17th she had a severe fall in turning quickly and could not rise; she had fractured right femur in lower third; no evidence of any contusion of the soft parts and it was thought that the turning and not the fall had produced the fracture. She appeared to have no pain and never complained during the dressing of the fracture. In fourteen days dressing was renewed, the limb was in excellent position and showed no shortening; there was much callus. Forty-one days after injury she could lift her leg easily and unconsciously. (Abstract, Burr, C. B., *loc. cit.*, p. 73.)

A CASE OF GENERAL PARESIS IN WHICH SPONTANEOUS FRACTURES OCCURRED.

A man, æt. 43, presented himself as an out-patient, with a fracture of both bones of the left forearm. Three days before, on lifting a shovelful of dirt, he felt a slight pain in his arm and heard a slight cracking, but continued his work. The manipulations necessary for putting the arm

in a plaster dressing caused him no pain. He returned five weeks later to have the plaster removed; union was complete. At the same time, he showed his right arm and examination showed that the two bones of the forearm were broken. He had slipped on a flight of stairs and in falling struck the back of his hand, not very strongly, on some coal in a basket that he was assisting in carrying. In this case also, he did not know he had broken any bones. The clinical history leaves no doubt that he was a general paretic.

The points of interest are:

1. In a paretic, whose disease had existed over six months, two spontaneous fractures occurred at intervals of five weeks.

2. These fractures caused no pain to the patient at the moment of their production, nor at the time of their reduction.

3. The union was rapid, as has already been noted for this class of fractures. (Abstract, Froelich, American Journal of Psychology, Vol. 5, p. 84.)

**Hematoma Auris.**—The "insane ear," hematoma auris, found also in other forms of insanity, is particularly frequent in general paresis. It occurs occasionally in sane persons, especially in those engaged in boxing, playing foot-ball, or wrestling, but under these circumstances it heals quickly.

In all forms of insanity the prognosis is bad after the development of hematoma auris. Clouston has seen but four or five cases recover out of over eighty, who had fully developed hematoma auris; and four others, who partially recovered after slight threatenings of hematoma, which might not have developed fully, or were stopped by blistering fluid. Savage has seen but one case in which a patient was discharged well, after having marked hematoma. None of these cases of recovery, of course, were paretics.

It consists of a rapidly developed extravasation of blood into an intracartilaginous cyst of the auricle of the ear. It fills the pavilion of the ear, but does

not affect the lobe; it grows to the size of an egg, sometimes in a few hours, more frequently in a few days. It is of a dark, reddish-blue color, rarely lighter in shade and is filled with a gelatinous substance consisting in part of broken-down blood. Difference of opinion existed as to where the disease is situated, Foville saying it occurred under the perichondrium, Mabille that it was between the cartilage and the skin, and Vallon that it was in the body of the

FIG. 3.

*a* *b*

HEMATOMA AURIS. (*Williams.*)

*a*, showing the distended ear; *b*, showing the shrivelled ear.

cartilage. The latest exposition is by Ford Robertson.[1] His views may be thus expressed: Hematoma auris, to which the insane are particularly predisposed, is due to the occurrence of certain morbid changes in the ear cartilage. They consist in the degeneration of the cells, loss of the elastic fibers,

[1] Path. Ment. Dis., p. 48.

and breaking down of a portion of the hyaline basis of the cartilage, so that a cyst is formed. New capillaries develop in the walls of these cysts. The new capillaries are very prone to degenerative changes, probably identical with the hyaline fibroid degeneration so common in the intracranial vessels. From rupture of these new capillaries hemorrhage into one of these intracartilaginous cysts results. The rupture may be spontaneous, but usually a traumatism, more or less severe, initiates the effusion.

The tumor heals in time by reabsorption, but if left untreated rupture may take place and in all cases a bad deformity remains. If treated at once with blistering fluid absorption takes place, the size decreases, but the cartilage usually remains hard and shrivelled. It is most frequently seen in the second and third stages of paresis, more often in the left ear, and is rarely found in women.

## CHAPTER XIII.

### PARTICULAR SYMPTOMATOLOGY (*continued*).

**Blood.**—As the disease develops blood examinations show in all cases a diminution in the amount of hemoglobin. The richness in corpuscles varies much, according to Lewis, from 75 to 126 per hemic unit, the latter register in cases of maniacal excitement; but since a diminution in the number of red corpuscles is found quite as often, and even more frequently, in maniacal patients, this establishes no connection between mania and the corpuscular richness. However, the diminished coloring power of the corpuscle is of importance as it indicates the lack of hemoglobin.

In the third stage the blood becomes fluid and viscous, and coagulates with difficulty. The clot is soft and diffluent, and tears readily. Sometimes angular globules and crystals of urate of soda are found, and Voisin reports in some cases vibriones and bacteria. Lewis[1] gives an interesting table of the results of the blood analysis of fifteen cases of general paresis at different periods of the disease.

**Temperature.**—Many conflicting circumstances prevent definite statements as to the temperature of paretics. At one time it was believed that the revelations of the thermometer were of the utmost importance in the study of the disease. But frequently the temperature is affected by the presence of some intercurrent disturbance, bed-sores and local lung

[1] Mental Diseases, 2d ed., p. 326.

complications being particularly responsible for a rise of temperature. Slightly exciting circumstances may cause a rise, while a transitory change of temperature may occur without any apparent mental or physical change, so that fluctuations of temperature due to morbid changes of the malady alone are difficult to secure.

In early stages very little, if any, increase occurs except in the acute cases. When the disease advances rapidly there is continued higher temperature, and in the last stage of the disease, if uncomplicated, in nearly all cases the morning temperature is about one hundred degrees and the evening one hundred and one or two. If further increase or sudden variation occurs, it is apt to mark the advent of some physical trouble. Loss of sensation and motor power is often marked by higher temperature. Dr. Macleod[1] says that cases of fatty degeneration are characterized by high temperature, continuing until death; while those of extreme emaciation are sometimes marked by high temperature until complete relaxation of the sphincters takes place, when the temperature gradually declines to the end, death in these cases seeming to begin in the extremities from deficient circulation.

In cases of apoplectic attacks, or epileptic convulsions, the temperature rises and continues high through the attack, and decreases slowly after, to either recovery or death. The rise may amount to from one to five degrees, according to the severity of the case. Fits are usually accompanied by profuse sweating, unilateral or general, and this sweating tends to reduce the temperature of the body. Mickle[2] gives the temperature record of a case during an apoplectic attack, previous to which the

[1] Bucknill & Tuke, Psychological Medicine, p. 325.
[2] General Paralysis of the Insane, p. 179.

temperature had been normal. It rose at once to 103°, and gradually fell to 102° in twelve hours; on the following day it ranged from 100.4° to 98.8°. On the third day the patient recovered from the attack. The pulse was not more than 79 to 84 when the temperature was at the highest.

The usual condition of paretics is found to be a normal temperature with a slight evening rise; this continues until a late stage of the disease. Occasionally a subnormal temperature is found, but this is rare. In cases that are bright and active in the morning, but become stupid and listless and have to be taken to bed in the afternoon, there is found to be no rise of temperature in the evening, and sometimes a fall of one degree.

After a study of twenty-five cases, Peterson and Langdon[1] say that as regards the average bodily temperature, also the diurnal oscillations of the temperature of paretics, they correspond to physiological norms; that the axillary differences are so small that they cannot be considered as abnormal, and certainly not of any diagnostic significance; and when variations of temperature occur in general paretics their cause must be sought in conditions not related to the pathological phenomena of general paresis, but depending upon thermogenic features, not recognized by the physician, or marked by the mental state of the patient. In this report they do not include a study of temperature in connection with apoplectic and convulsive seizures.

ILLUSTRATIVE OF LACK OF RELATION BETWEEN TEMPERATURE, PULSE AND RESPIRATION IN PARESIS.

A. B., male, æt. 45; American; single; lungs and heart normal. Contracted syphilis in 1883 and had secondary

[1] Journal of Nervous and Mental Diseases, Vol. 18, p. 750.

lesions of the skin. He was treated for syphilis. Exciting causes were excessive devotion to business and sexual excess. He showed symptoms of mental disturbance in the summer of 1890 and in the fall an eminent alienist diagnosed paresis. Later he was taken to Europe for anti-syphilitic treatment, but derived no benefit mentally or physically. He was admitted September 30, 1892, in the first stage of paresis. Early in June, 1894 (the patient being in the second stage), observations showed that the temperature was usually slightly above normal, the highest mark being 100.2° in the morning after the patient had slept badly and had been very violent during the day. There was no constant ratio between the temperature and the pulse and respirations. From June 8 to 14 a temperature of 100.3° was obtained after a convulsion lasting twenty minutes. The observations were renewed in February, 1895. The patient was in the third stage and confined to his room in his chair, but later was bed-ridden. The charts of the temperature, pulse and respirations, covering a series of weeks, show that their relation to each other and to the temperature is more variable than under normal circumstances. In the present case convulsions and the condition of the bodily temperature seem entirely independent of each other.

In this case both general and localized spasms were very frequent. Spasms of one or both eyelids occurred at times without any other convulsive movement. On March 13 there was spasmodic closure of right eyelid for three hours, and it could not be opened except by force. There were also spasmodic contractions of the laryngeal muscles followed by cyanosis, dyspnea and cough, lasting at times four or five minutes. After these attacks large quantities of mucus would be secreted which the patient was often unable to remove himself. During these attacks the temperature remained very low. A week before death the patient developed a mild attack of bronchitis and secreted mucus so abundantly that he was almost asphyxiated thereby. On April 16 a temperature of 95.4° was recorded during a convulsion. There was no difference between

the temperatures on the right and left sides of the body. On April 24 complications developed and as a result there were much wider oscillations in the temperature, pulse rate and respiration. The patient died May 1, 1895. Convulsions had occurred almost daily between February 21 and May 1. (Abstract, Parsons, Journal of Nervous and Mental Diseases, Vol. 20, p. 410.)

**Pulse.**—Frequently the pulse-rate is not markedly changed, rarely it is slower than normal, more frequently slightly increased. In the early stages of the active form often a very high tension is marked by the pulse; the beat of the heart is powerful, the first sound clear and full, the second accentuated. In either of the stages, or in some cases from the first stage, the pulse reveals a lessened arterial tension, or has the usual normal qualities. Toward the last stage there is usually marked cardiac enfeeblement.

Savage[1] says: "Having taken sphygmographic tracings of hundreds of cases of general paralysis, I have come to the conclusion that there is no special pulse which can be said to be in any way associated with this disease. In a few, the left ventricle acts with undue vigor, as if to overcome some general resistance to the circulation; and in a few, distinctly febrile symptoms are present; but the pulse trace pointed to nothing which can be in any way looked upon as characteristic in most cases of general paralytics." Spitzka[2] also observes that "the revelations of the sphygmograph, like those of the thermometer in paretic dementia, are of high scientific, but not of any great diagnostic value, except indirectly in this way—there is often found an irregular and coarsely wavy character of the line of

[1] *Op. cit.*, p. 337.
[2] Manual of Insanity, p. 212.

descent, which is the expression of the irregular muscular tremor of this disease."

**The Bladder.**—Upon the appearance of spinal symptoms, showing that the lumbar cord is involved, a patient is never free from the possibility of bladder troubles.

*Retention of Urine.*—This condition, when it exists, demands the closest watch, for if not relieved, it may lead to rupture of the bladder. The possibility of this catastrophe is generally enough to produce anxiety, especially in asylums where paretics are gathered together.

Chronic cystitis, or spasmodic contraction of the sphincter urethræ resulting from lumbar irritation, is a common cause of this condition. Again, paralysis of the bladder is a frequent cause of retention. Usually accompanied with dribbling, the incontinence or retention, which does not relieve the condition, may mislead the physician or the nurse. Degeneration of the muscular coats of the bladder sometimes follows. Retention, or incontinence is only transient early in the disease, if present at all. Moreover, the patient is able to draw attention to his condition.

*Incontinence of urine* occurs always in the last stage, and is a cause for constant care.

**Urine.**—The secretions of the body are altered to a varying degree in general paresis, especially as the disease progresses. This is particularly true of the urine, which beyond doubt acts as an index to the alterations in the nutritive phenomena.

In the earlier stages the urine will show little of diagnostic value. An occasional trace of albumin may be detected, which is most likely to be found after a convulsive seizure. The specific gravity is usually well within the normal, *i. e.*, 1015–1025. On account of the general tendency to excitement in the

first period of the established disease one would expect to find an increase in urea and the chlorids, the representatives of retrograde metamorphosis and such proves to be the findings very generally.

The phosphoric acid is diminished, while the sulphuric acid is about normal. It is but rarely that casts are found; when present, they are of the hyaline variety. No great significance is attached to the presence of these bodies, unless they persist, or are associated with casts of other varieties, *i. e.*, granular, epithelial, etc. There is no constant lesion of the kidney present during the disease sufficient to result in the constant presence of casts. Wolfenden (Lancet) states that Selmi found two volatile bases in the urine of patients suffering from general paresis, one like nicotin, the other like coniin. Other observers have noted the presence of acetone and peptone (Klippel & Servaux).[1]

An excellent report by Meeson (West Riding Reports per Sankey)[2] gives a summary of the urinary examinations in six well-marked cases.

1. The quantity of urea varies above and below the average of health, being in the majority of cases considerably increased.

2. The chlorids and phosphoric acids are notably diminished, the sulphuric acid is normal.

3. The specific gravity varies within wider limits than in health, the means do not differ.

4. Absolute quantity estimated according to the body weight is slightly in excess of normal.

In the terminal stadium the great difficulties to be overcome in securing accurate results are the strong tendencies to alkaline change and the so-called wet habits of the patient. Urea estimation, under these

[1] Berkley, Mental Diseases, p. 190.
[2] *Op. cit.*, p. 275.

circumstances, is in reality not an easy or very satisfactory process, and the results often anything but accurate. Turner[1] has shown that in the convulsive seizures of paresis the sulphates are found in excess in the urine.

[1] Journal of Mental Science, Vol. 41, p. 14.

# CHAPTER XIV.

## DIFFERENTIAL DIAGNOSIS.

The symptoms manifested in a typical case of general paresis are so well defined that it is not difficult, even for an inexperienced observer, to come to a definite determination; especially is this true of the intermediate stages of the disease. If a patient is first seen in the latest months of his illness, without a history of the previous course and symptoms, it may be impossible to distinguish the condition in which he is found from that due to other organic lesions. Again, at the earliest onset of the trouble, when the symptoms are slight and undecided in character, there is often a difficulty in diagnosis, which in some instances can be surmounted only by an acuteness of observation that comes to one of experience in the signs of mental and nervous disease.

The difficulty in diagnosis arises from the fact that the pathological condition is a general and indeterminate invasion of the nervous system, appearing often indiscriminately in any of its divisions. This gives rise to much irregularity and variety in the symptomatology, both psychic and physical, and a consequent simulation of various simpler organic disorders. As Spitzka remarks: "Among the individual signs may be found almost any and every focal and general symptom known to the neurologist." According to the predominating character of its manifestations the disease has been divided into a number of types, and it is in the rarer and more obscure of these types that we find the greatest difficulty. Thus there are cases

in which melancholia and hypochondria form the prevailing phase, those in which maniacal excitement predominates, and those where dementia exists alone without the characteristic excitement. Spinal symptoms of either a spastic or tabetic nature may obscure the diagnosis and a predominance of the epileptiform and apoplectiform attacks may closely simulate conditions of a more localized origin.

The symptoms upon which we chiefly rely in making a diagnosis of general paresis are: affection of speech, pupillary anomalies, muscular tremor, and uncertain gait, accompanied, on the mental side, by intellectual weakness, and, in many cases, by delusions of grandeur. When these exist in combination, one needs no further assistance in the recognition of the disease.

We will touch briefly upon the principal conditions which may be mistaken for general paresis, mentioning the salient points which enter into the determination of a correct diagnosis in each case.

**Chronic Alcoholic Insanity.** — Closely allied in some of its phases with general paresis is the form of insanity due to chronic alcoholism. In considering this we must bear in mind its etiological connection with the disease in question, as well as the fact that the two conditions may exist in combination.

It is the type of paresis in which the mental state is most marked by melancholic depression and hypochondriasis which most closely resembles brain disturbance due to alcohol. The delusions of a persecutory nature and the general attitude of dread and suspicion which mark this latter disorder are very unlike the exhilarated fancies and contented calmness of mind found in a typical case of paresis. The speech, though slurred and tremulous like that of the general paralytic, shows a thicker enunciation

and is without the characteristic vocal defects of that disease, so significant to the practiced ear. The tremor in alcoholism is more universally distributed, and not first noticed in certain special muscle groups. The sensorial disorders of various kinds are much more prominent; the motor symptoms, including muscular ataxia, on the other hand, are decidedly less in extension and are not of the steadily progressive order found in general paresis.

In certain cases of chronic alcoholism, which symptomatically closely resemble some types of general paresis, judgment may have to be suspended for a time. Where the excessive use of alcohol is the only factor involved, the removal of the stimulant and the effect of treatment will probably, in time, determine the diagnosis. There are also cases of acute alcoholic mania, which so closely resemble paresis of the maniacal form, that time alone can definitely settle the question.

**Syphilitic Insanity.** — Another affection, produced by an indeterminate invasion of the whole system is that form of mental disease which is due to syphilis. Most readily confounded with it are those cases of general paresis in which dementia is the chief, or an early symptom, and in which the exaltation is but slightly marked, or entirely absent, the mental state being tinged with depression and fear.

This form of insanity is characterized by mental excitement and motor restlessness, passing on through stages of mental enfeeblement, with muscular incoordination and paresis, into a complete dementia and motor paralysis. An early and rapid decline of memory is common in this disease, as is also the occurrence of epileptiform and apoplectiform attacks. Except in the early and undefined stages of either disease, the diagnosis should not be attended with

great difficulty. In general, the much longer duration of syphilitic insanity, the irregularity of occurrence and the capricious grouping of the various symptoms are characteristic distinctions, in addition to the effect obtained by specific treatment.

The principal symptoms of syphilitic insanity, which should prevent confusion, are the intense and persistent caphalalgia, worse at night; the early well-defined apoplectiform and epileptiform attacks, with their pronounced and permanent after-effects; the tendency to local spasm, followed by contractions and rigidity; the optic neuritis; the early failure of the special senses, complete rather than gradual; the early and localized anesthesiæ. In this disease the purely nervous symptoms precede the mental signs. The state of mind is one of great irritability and depression and the delusions, if they exist, are of a suspicious or persecutory nature.

In syphilis we find paralysis of the cranial nerves, complete and not necessarily preceded by convulsion, unlike the more incomplete and transitory effects of the convulsive attack of general paresis. The motor impairment is paralytic rather than parctic. It is apt to be localized and unilateral, and it is stationary or retrogressive in its course. The ocular symptoms are often intense, being an extreme double optic neuritis, or a severe form of choroiditis, followed frequently by sudden blindness. The affection of speech, so characteristic in general paresis, is not found in syphilis, nor is the impairment of facial, lingual and pharyngeal muscles so common, and when found, it is almost always distinctly paralytic in character.

**Paralytic Insanity, or Organic Dementia.**—In this form of disease there is a progressive enfeeblement and diminution of mental power, generally complicated

with some form of motor paralysis. The mental symptoms usually begin as a mild depression, superseded by a mildly exalted condition and combined with a childish emotionalism. The final state is one of complete forgetfulness and helpless torpidity. This being not a primary disease, but secondary to brain tumor and other lesions, the symptoms are irregular and vary with the nature of the lesion. The various symptoms are non-progressive in course and remain stationary for years, the duration of the disease being in some instances many years. The majority of the cases occur at a later period of life than is common with general paresis.

The enunciation is thick and paretic, but it has not the tremulousness found in general paresis, nor the same peculiarities. Every word is slurred, or imperfectly pronounced, and there is no greater hesitancy over words that are long, and made up of consonants, than over the shorter vocal sounds. If, however, the primary condition be an apoplexy, involving the cerebral convolutions, the speech symptoms may more closely resemble those of the paretic. Various epileptiform and apoplectiform attacks may occur during the course of the disease, and their effects are more persistent than the sequelæ of similar attacks, occurring in the course of the contrasted disease. Among the motor signs are various spasms and paralyses, or paretic affections, both local and general.

In many cases the mental symptoms are slight, and obscured by the much more prominent sensory complications. Where the primary lesion is a brain tumor, the marked and characteristic symptoms of that affection come to our aid. But certain cases of cerebellar tumor, with a general impairment of muscular power, a swaying, staggering, tottering gait,

with, possibly, some incoördination of muscular movement, may give rise to great difficulty in diagnosis. In such cases the determination must rest upon the prominence of headache, vertigo, the characteristic vomiting and ocular defect.

**Epilepsy.**—The cases of paresis in which the convulsive seizure is a frequent prominent and early symptom, may have to be distinguished from cases of genuine epilepsy, but this should not be difficult. The easily irritated temper of an epileptic, with the strong impulsive tendency to acts of violence, is very different from the disposition which is found in the general paralytic, although there are cases which are markedly of this opposite nature.

The chief points of difference will be found in the stationary condition of the physical and mental state between the attacks, and the transitory and inconstant nature of any effects which may be produced by the convulsions. The tendency to sleep, or semi-stupor, following the epileptic fit, differs from the complete stupor remaining after a convulsion, occurring in the course of general paresis. In this latter disease, each fit is followed by a permanent increase in mental symptoms, out of all proportion to the severity of the spasm, which is generally unilateral, and may occur in a limited group of muscles only. Whereas, the spasmodic twitching, in an epileptic attack, is more generally universal.

The speech of an epileptic is slow, and in long-continued chronic cases may be thickened and tremulous, accompanied by a jerky tremor of the lips and face during speech; but the mental and physical state of the patient, between the attacks, should clear up any doubt.

**Apoplexy.**—There are several points which serve to separate the congestive attack, occurring during the course of general paresis, from that due, primarily,

to cerebral hemorrhage. As, for instance, the absence of stertorous breathing and the characteristic puffing out of the cheeks. After the attack, the paralyzed limbs are left rigid and frequently in a state of violent action, not flaccid and relaxed, as in apoplexy. The transitory congestive symptoms quickly pass away, leaving a permanent aggravation of the diseased condition, in its physical or mental aspect, or in both.

The customary rise of temperature, during or preceding the attack, is in marked contradistinction to the subnormal temperature of a true apoplexy; the paralyses, resulting from which, are of much longer duration and more strictly limited in extent and distribution.

**Acute Mania with Delusions.**—There are cases of acute mania marked by false ideas of personal grandeur, power or wealth, which, especially when complicated with some defect in speech, or tremulousness of the facial muscles, may be, for a time, exceedingly difficult to distinguish from those cases of general paresis, in which maniacal delirium, and outbursts of fury, play a prominent part. It may be impossible to make a definite diagnosis, until after the subsidence of the acute outburst.

The brief duration and sudden cessation of such an attack in general paresis, leaving the various delusions still prominent, together with a marked amnesia and mental weakness, is in strong contrast to the slow and gradual recovery of true mania, with the lucidity of mind and extraordinary acuteness of memory, that mark the convalescent period. The gusts of rage and suspicious aversion are transitory and easily diverted in general paresis, and there is not that tendency to violence and malicious acts, as an essential part of mania per se.

While the delusions of an acute mania may assume an exalted and self-satisfied nature, the tremendous exaggeration common to general paresis is wanting, and this is considered by some to be an important and valuable point in the diagnosis. The delusions of monomania, fixed in character and logically reasoned out, being due to a perversion of intellect, not simply the exaggerations of an imagination uncontrolled by reason, can raise no question in the mind of the careful observer. The tenacity with which they are held is in striking contrast to the shifting and easily diverted mental processes of the paretic.

**Senile Insanity.** — Cases of senile insanity, which may present symptoms strongly suggestive of general paresis, are usually made clear by the advanced age at which they occur. General paresis is rarely found in subjects after sixty years of age. While, on the other hand, there have been cases of undoubted paresis, which have occurred in the aged; and some of unusual duration which have been found in advanced life. The cases of mild maniacal exaltation, coexisting with delusions of great possessions and power, together with changes in speech, are sometimes found to be cases of general paresis in the aged. But the senile speech is not the typical defect of paresis due to convolutional decay. It is rather a combination of the loss of muscular power and mental quickness, due to failing faculty; and it is characterized by a combination of aphasic, amnesic and paretic symptoms. This gives rise to a slight indistinctness, from imperfect muscular power and incoördination, with a difficulty in finding words, and a tendency to omit parts of a sentence, especially the nouns. There is no accompaniment of a fibrillar trembling of the facial and labial muscles. The advanced dementia found in senile cases is distinguished by the absence of

motor symptoms, such as tremor or paresis, and by its non-progressive and stationary character, and its comparatively long duration.

**Tabes Dorsalis.**—In the cases where the spinal cord is involved, or is the seat of the disease, we may have a condition strongly suggestive of a tabes dorsalis. There may be an exaggeration of the deep tendon reflexes with a paralysis, spastic in type, or as frequently, a marked impairment of knee-jerk and ankle reflex, associated with a tabetic gait, and other symptoms, closely simulating this disease, but transient in duration. The other and distinctive symptoms are, however, so marked that a differentiation is not difficult.

**Disseminated Sclerosis.** — The lesion of a disseminated sclerosis, being general and irregularly distributed, gives rise to numerous symptoms similar in nature and localization to those of general paresis. Such are the muscular paresis, tremor, speech affection, etc. But the staccato quality of the enunciation should not be confounded with the slurred drawling speech of paresis, except by observers of limited experience. Then, too, the tremulousness present is a decided "intention tremor," and is distinguished by its coarser quality and greater excursion. Nystagmus is a frequent and significant symptom, in addition to the bulbar paralysis and muscular rigidity and contractures. There is only a late development of mental symptoms, if any appear.

**Lead Poison.** — The epileptic seizures and loss of memory, which often occur in cases of lead-poisoning, may give rise to some suspicion of a paretic condition, if the other symptoms and the history of exposure and invasion are not clear. Especially would this be so in those cases, where a delirium, either maniacal or melancholic, terminates in a dementia of

an extreme degree. The occurrence of the characteristic wrist-drop, the discoloration of the skin and the blue line on the gums would determine the case. To these may be added the greater prominence of sensory symptoms, anesthesia, etc., together with a total failure of muscular response to the electric current.

**Paralysis Agitans.** — Some cases of general paresis have a symptomatic paralysis agitans occurring in their course; or paralysis agitans may be complicated with an affection of speech and muscular weakness, a stolidity of feature and a slowness of movement not unlike the condition seen in the former disease. The history of the case should decide it, as the paralytic tremor, when seen in paresis, always follows its more characteristic mental and motor symptoms.

### A CASE OF GENERAL PARESIS ILLUSTRATIVE OF DIAGNOSIS.

A case remained for some time in doubt and presented in its early stages symptoms by no means characteristic of general paralysis. The patient was brought to the asylum with insanity of only a few days' duration. He had been riding on the pavement, assaulting the police, and he was incoherent and rambling. He said the sun was turned into the moon, and such things; he had no grandiose delusions; he was frequently taciturn, not speaking perhaps for a whole day. On alternate days his condition varied; on one he was dull and depressed, refused his food and would not speak; on the other, he was gay and excited. He had few delusions and he said little except that he "wanted to go." He was wet and dirty; he had no stutter. The signs of general paralysis were mostly absent but there was irregularity of pupils and great defect in memory. In six months he got so much better that he went into the country with his wife and was reported to be quite well. When readmitted in the following year the signs of general paralysis were well

marked. His sons were dukes, he was worth millions, etc. At the commencement only the irregularity of pupils, defect of memory and general absent-mindedness made the prognosis unfavorable. He complained constantly of pain in the head. When said to be recovered he remained in the country idle; the moment he resumed work the symptoms returned and with unmistakable features of the disorder. (Abstract, Blandford, Insanity and Treatment, p. 303.)

AN ILLUSTRATION OF EARLY DIAGNOSIS.

Mr. ——, a druggist, 38 years old. Three or four years ago he began to show a want of aptitude in his work, which had been slowly increasing. He had also moderate pains in his legs and occasional headaches, for which he began to dose himself extravagantly. He attended to business closely, although he had excellent clerks, and nothing happened amiss. His clerks and family, and then customers began to notice absent-mindedness and inattention in him. His father-in-law, an intelligent wholesale druggist, thought he must be taking morphine. Without giving any reason for his actions he stopped going to church and to the choir of which he was leader, and made false statements due to confusion or impaired memory and attention. He was pliant, dull, apathetic, with lessened animation in his expression and conduct, showing inertia and weariness on moderate exertion. He lost forty-seven pounds in spite of a voracious appetite and abundant nutritious food. There was moderate tremor of hands and tongue but no more than is often seen in neurasthenia. His articulation was slow. He readily gave up his business and went to an asylum, where he died with typical symptoms of general paresis. (Abstract, Folsom, *loc. cit.*, p. 17.)

A CASE OF GENERAL PARESIS ILLUSTRATIVE OF DIAGNOSIS.

A clergyman, had an exacting city parish; with the age and physique in which general paresis prevails. After ten years' service it was found that judgment, common sense

and notions of propriety were very slightly impaired; he was easily irritated, fatigued by bodily exercise, restless, inattentive, almost indifferent; finally he called for the same hymn three times and did not notice the slip. Often he had dizziness and headache; the more he wrote the worse his writing became. He was sent to the country to rest for two years; he improved somewhat, but did not regain his previous intellectual power. Gait became heavy, knee-jerk exaggerated; face lost animation and expression. He took a small parish where the demands made upon him are light and he has preached for three years without complaint. If tired his gait is unsteady; he cannot make himself heard in a large hall; he has less serious views of life. (Abstract, Folsom, *loc. cit.*, p. 15.)

A CASE OF GENERAL PARESIS EXHIBITING TYPICAL FEATURES IN DIAGNOSIS.

Mr. Z., æt. 38; lawyer; on admission he was well developed; all vital organs but stomach in good condition. He has indigestion most of the time; he is irritable and suspicious; he says he is ill-used by his family; he has lost the power to work; tremor of tongue when protruded with involvement of muscles of expression; speech scanning; articulation of labials difficult; pupils normal but are very mobile and dilate widely under excitement; reflexes negative. History: He was brighter as a boy than his brothers and in good physical health. He was never on good terms with his family because they did not appreciate his intellectual capacity. After leaving college he had diphtheria, leaving him profoundly prostrated, from the effects of which he did not recover for more than a year. He began to practice law successfully and also entered politics, which led him into convivial habits and he became addicted to alcohol. After being defeated in an election he gave up practising law and took up other business, working from 8 A. M. till 11 P. M. for eighteen months. After finishing this he was much incensed because he thought his work was not properly valued. He left his native city and entered a Western firm where he did not get along well

either, always accusing them of cheating and not appreciating his work. Three years ago he began to show unusual irritability and a disposition to quarrel; he would become violently angry for trivial causes; his self-consciousness was morbidly developed; he was very egotistic and suspicious. Since then all these qualities have become more prominent. He thinks he is not properly treated by his family or employers. There is no history of insanity in the family, although his father was morose and eccentric and his brother became insane on account of an accident. Mr. Z. has been conscious of a failing power to work and has resorted to alcohol to keep himself up and drown his bitter feelings. He also used tobacco immoderately. He has suffered with indigestion, with flatulence and fugitive pains in the stomach, back and head. For the first month after admission he was irritable, cynical and morose, alternately excited and depressed, railing at his family and friends, criticising the stupidity of every one. During the following year there was progressive mental and physical failure; impairment of memory and attention; loss of physical power; growing paresis of facial muscles; explosive laughter and weeping with exacerbation of excitement; no hallucinations or delusions; he was constantly trying to excite sympathy. He applied to various lawyers to institute proceedings for his discharge. When by himself he would talk over his grievances, cursing family, doctors, etc. He was very unhappy, but never violent. He was constantly trying to induce newspapers and lawyers to expose the management of the insane asylum, but would not appear personally in the matter. His handwriting deteriorated; sometimes a letter would be omitted or the last letter of a word would end in a scrawl. The lines became uneven and wavy and with intervals so that they looked like a series of dashes. He wrote with many flourishes and spoke very deliberately. Soon afterward he managed to escape and he is now in a sanatorium, from which place he is sending out letters, asking newspapers, etc., that they expose the mismanagement of insane asylums. (Abstract, Tomlinson, *loc. cit.*, p. 778.)

### A CASE OF GENERAL PARESIS ILLUSTRATING DIAGNOSIS IN THE EARLY STAGE OF THE DISEASE.

A senior partner in successful commercial house; strong constitution, healthy, 50 years old; laryngologist consulted because it was thought he could not speak so clearly as formerly; no local trouble, supposed to be nervous. He attended to his routine duties well, but became tired early in the day, and was irritable and meddling. His talk was not always to the point but there was nothing to suggest mental trouble. He could not take up new work readily, or remember recent stories; in some small matters at home he became careless and inattentive. When giving orders across a large room his voice was raised as if in effort, and the sentences came out explosively; was diagnosed a general paretic and advised to go to Europe. In this he was pliant, almost indifferent. He was well behaved on the steamer. In England and France he showed lack of interest and became dull and inactive; articulation became less clear; he was irritable, and easily tired. After return he went to a summer resort where he showed delirium at night with delusions and some violence; also incoherence and thickness of speech. Diagnosis doubted because of continued business ability, but he finally presented a typical case of general paresis and died in two or three years. (Abstract, Folsom, *loc. cit.*, p. 9.)

### A CASE OF GENERAL PARESIS IN WHICH THE DIAGNOSIS AND ETIOLOGY WERE COMPLICATED AND INTERESTING.

C. D., admitted, æt. 35, with symptoms of general paresis; he was one of a family of eight children of hard-working, steady parents. He was in school for a short time, then became a plumber, working at it very hard; he was good looking, well-nourished and strong. In his youth he was given to alcoholic and sexual excesses. After his marriage, at 26, he was less alcoholic but sexual excess continued. He was always a busy, unrestful man, and a capable workman. Three months before marriage he worked at a job for a week night and day in extreme heat;

his illness was dated from this time. Again he worked at a similar job eighteen months after marriage. After finishing the job he came home "blue in the face" and "fainted"; soon after he suffered from lead-poisoning. For four years he did nothing, then started a shop, but soon, after much worry and chagrin, all his means were gone. Afterwards he was a successful cabman until he was thrown, breaking a leg and getting a severe blow on the head. Towards the end of his treatment in the hospital he became manifestly insane. (Abstract, Wilson, G. R., Journal of Mental Science, Vol. 38, p. 40.)

# CHAPTER XV.

## ETIOLOGY.

While a large amount of definite knowledge has been the product of extensive investigations into the etiology, clinical history and pathology of this disease, there remains much to be explored in these several fields, and even at this late day it may be said that the comparative value of many vexatious elements continues to be a subject of dispute. Doubtless the following concise summary of causes as given by Chapin[1] finds wide concurrence: "The history of the large majority of cases is one of intemperence, licentiousness, sexual excess, syphilis or some nervous exhaustion incident to excessive application to business, or the great strain attending reverses." This view to be acceptable to some authors needs to be qualified by the revision that the results of heredity should be acknowledged as an important predisposing cause. There are prominent writers who claim syphilis as the sole etiological factor; again, others (and they appear to be numerous) who establish this "unitarian" view on a neuropathic basis, meaning by this term a susceptibility to an invalid brain, which may be either inherited or acquired.

**Heredity.** — Among the general insane a history of insanity in previous generations is variously estimated as from 30 to 90 per cent. of the cases; in general paresis the usual statistics show that the hereditary character of this malady is not so marked as that of some other forms of insanity. Some writers place it

[1] Compendium of Insanity, p. 177.

as low as 10 per cent. and others as high as 70 per cent. There are extreme views not confined to these limits. Krafft-Ebing, for instance, maintains that the predisposition is usually acquired and not hereditary, and, on the contrary, Näche believes that in a majority of paretics the brain is defective from birth, and when to this is added the other great factor—syphilis—the result is not far to seek. Berkley holds the same view, basing his opinion upon the errors of development of brain convolutions and of the defective growth of the hemispheres, and especially upon the microscopical evidences of irregular construction and anomalies in the cortical cells.

Folsom says: "My experience leads me to the conclusion that in those cases of general paresis without a previous history of syphilis the vast majority occur in families in which there have been cases of insanity, epilepsy or apoplexy." Regis thinks the most important predisposing cause of general paresis is the congestive or cerebral tendency, usually the result of heredity. He adds that the disease has its source in an heredity that is not vesanic but cerebral, arthritic, or congestive and cites as authority Lunier, Doutrebente, Baillarger, Ball, Lemoine and Pierret. As to paretics who are the offspring of insane parents he notes that this particularity shows itself in the vesanic, remittent or circular form, that is to say, "It is imposed on general paresis by the predominance in the subjects of the paralytic insanity over the paralytic dementia."[1] He speaks also of having found many times consanguinity in the ancestors of general paretics.

The family history in all types of insanity is always of importance, for while the disease may not reappear in

[1] In explanation of this view, it must be kept in mind that this author holds to the dual theory of the disease.

the same form, a record especially of apoplexy, epilepsy, or alcoholism, should put the physician on his guard; for there can be no doubt that defect, deterioration, or vitiated quality of brain, the necessary results of these conditions, are strong predisposing agents toward paresis. And, on the other hand, from paresis is transmitted, not usually a tendency to the same disease, but a general tendency to organic and functional mental disorders.

The percentage of heredity is lower in private than in pauper cases, and lower in males than in females. One fact should be noted in this connection, that paretics usually leave small families; about one-third of the marriages are sterile and the families of the remaining two-thirds average only one and one-half child.

GENERAL PARESIS DUE TO HEREDITARY INFLUENCES.

Twin brothers, with a strong family history of insanity, both sanguine and keen in temperament, of very active habits, both indulging to great excess in wine and women; both following a similar occupation—an exciting one—and both were affected with general paresis within a year of one another. (Abstract, Clouston & Savage, Journal of Mental Science, Vol. 34, p. 65.)

BOTH PARENTS WERE ALCOHOLICS.

Two brothers under treatment for general paresis, their father was an alcoholic and died of cerebral apoplexy, their mother, a highly educated woman of violent temper, was also an alcoholic. In one of them the disease was attributed to sun-stroke. They were of good physique, keen, ambitious and passionate, both alcoholic and one of them, at least, excessively sexual. They followed the same occupation, a very trying and exciting kind of life and were conspicuously successful. Both acquired general paresis between the ages of forty and forty-five years. (Abstract, G. R. Wilson, Journal of Mental Science, Vol. 38, p. 33.)

BOTH PARENTS WERE ALCOHOLICS.

A. B.'s ancestors had had numerous breakdowns from neuroses of the higher levels. His father was a shrewd, steady, successful business man; his mother an energetic pious wife. He had a full cousin of both sides who died in the Crichton Institution, Dumfries. The fathers were not strikingly alike but the mothers were. At the height of a busy, immoral life the case ended in general paresis. (Abstract, G. R. Wilson, *loc. cit.*, p. 34.)

A CASE OF GENERAL PARESIS IN A DEGENERATE.

Young man of 25, always regarded as simple-minded, but tall and well developed, after business worry, manifested considerable exaltation, followed by a period of comparative well-being, with "faulty and slight mental enfeeblement," succeeded by a state of acute resistive excitement, ending fatally. (Abstract, Hotchkis, R. D., Glasgow Medical Journal, June, 1897.)

DEGENERATION AND GENERAL PARESIS.

A degenerate man, under M. Magnan's care for some time, who developed general paralysis, was ultimately admitted under Professor Joffroy's care as an illustration of the view which he holds, that a morbid heredity, more or less marked, or degeneration more or less obvious, is a frequent if not indispensable factor in the etiology of general paralysis.

The patient, a foundling born in 1851, of feminine build and habits in youth, became strongly addicted to sodomy after the age of 15, and led a life of debauchery in Paris. In 1893 his memory began to fail and he was arrested for occupying some one else's bed (mistaking (?) the story of the house). He was sent to the asylum; delusions, loss of memory, unequal pupils and slight affection of speech were noticed.

In May, 1895, he came under Professor Joffroy's care. His condition did not vary much till 1897, during which interval he had been working as a tailor in the asylum,

now he became more and more demented with fleeting delusions. In November, 1897, he took to his bed, and had general tremors with dirty habits. In January, 1898, his speech became incomprehensible and he died after getting weaker physically and intellectually, in March, 1898. (Abstract, Revue de Psychologie, 98, No. 10.)

THE DAUGHTER OF A PARETIC INHERITS TABES.

Heredo-tabes in a young girl with marked congenital syphilis whose father died of general paralysis but with no history or signs of syphilis. (Abstract, Mott, Journal of Mental Sciences, Vol. 55, p. 693.)

A PARETIC THE SON OF AN INSANE FATHER AND PARETIC MOTHER.

J. R. B., æt. 38, married, no children, a hard drinker, developed general paresis which made slow progress; father died of acute mania, mother of general paresis.

A CASE OF PARESIS WITH A NEUROPATHIC DIATHESIS.

J. H., aged 32, married, no children. First attack, duration two years; he was admitted in February and died in October. He was a hard drinker; grandfather insane; his father a steady man, died of phthisis.

A CASE OF PRECOCIOUS GENERAL PARESIS OF NEUROPATHIC HEREDITY.

A boy of neuropathic heredity, both paternal grandparents having had paralytic troubles, a cousin having been insane and his father formerly intemperate. No evidence of syphilis. During childhood he was healthy and a good scholar. At 14 he was put to work. After a month, his intelligence began to fail and he had to be told everything that he had to do; he wrote badly and could not make arithmetical calculations; he seemed changed, taciturn and silly; he stammered at times and his hands trembled when tired. On admission, he had wet his bed for a month; backward in physical development; slight

evidences of puberty though 17. His expression was dull, walk clumsy, all movements awkward. His mind was much enfeebled, he seemed apathetic and indifferent. Memory poor, no delusions; tremor of tongue and lips, extending at times to other facial muscles; articulation imperfect, especially when tired and with the lingual consonants; tremulous hands, clumsiness of handwriting with tendency to omit and misplace; inequality of pupils; attacks of formication, beginning in right foot and involving the whole right side; headache, general muscular weakness, no localized paralysis, knee-jerks exaggerated. (Abstract, Charcot, Archiv de Neurologie, March, 1892, *vide* American Journal of Insanity, Vol. 49, p. 76.)

GENERAL PARESIS IN MOTHER AND CHILD.

General paralysis in a child of 11 and in the mother at 45. There was a neurotic family history and the mother had had syphilis. One younger child died at an early age of convulsions, said to have been caused by congenital syphilis. The mental affection first was present in the daughter, who, up to the age of 10 or 12, was a very promising girl. The first symptoms were those of inability to skate as well as usual. The writing soon became affected and her dullness gradually increased to helpless dementia. The mother began to be affected a few years later than the daughter. The first symptom was extreme jealousy. Later she became very indolent and careless of her person, she began to drink freely and was unmindful of her household duties. Paresis of the muscles of articulation was an early symptom and the disease progressed in typical fashion. (Abstract, Muller, Allgemeine Zeitschrift für Psychologie, 55, 98, p. 151.)

GENERAL PARESIS IN CHILD AND TABES IN MOTHER.

The father was alcoholic and infected the mother with what was apparently syphilis, three or four years before the birth of the child. When aged forty-four the mother developed tabes and at the age of seven, following a severe attack of scarlatina with nephritis, the child showed signs

of beginning dementia. Her disposition changed and she developed a general fine tremor. Later she had an epileptiform attack and subsequently developed typical general paresis. (Abstract, Grannelli, Rivista, Psich. Neuropat., 2, 98, p. 213.)

**Syphilis.** — In the estimation of many authorities syphilis is regarded as the most common cause of general paresis. Bonnet and Anglade have held that in seventy to ninety cases out of a hundred in general paresis syphilis has existed. Bannister gives the percentage as 89, Houghberg, 75.7; Mendel, 75; Berkley, 50, and Graf, 40 per cent. According to Kraepelin the subjects of syphilis are from sixteen to seventeen times more liable to general paresis than others not so affected.

The tendency of the age is to regard the cases of general paresis where syphilis has existed as a parasyphilitic disorder. The exact relationship between syphilis and general paresis has not been solved, although it has been under active discussion for a long time. Mickle quotes the statistics of Lewin in which, out of 20,000 cases of syphilis, only one per cent. became insane and not one case of general paresis developed. The pathological processes of syphilitic brain disease and general paresis are different. In syphilis there are changes in the blood-vessels, and the formation of gummata, or diffuse meningeal infiltration. The first and third occur about the base of the brain, while the second is more apt to appear in the cortical region. On the other hand, in general paresis there is a chronic meningitis of the convexity with atrophy of the cortex. Some years ago Peterson made a study of syphilis as an etiological factor of paresis, which comprised an examination of the contributions of no fewer than seventy authors and his conclusions in this connec-

tion are interesting. (1) A history of syphilis is found in sixty to seventy per cent. of cases of general paralysis of the insane. (2) The fact must not be lost sight of that in thirty to forty per cent. of these cases no history of syphilis, congenital or acquired, is to be found. (3) Antecedent syphilis is seven to ten times more frequent in general paralysis than in other forms of insanity. (4) Syphilis is, therefore, to be looked upon as a frequent, but not constant, factor in its production. (5) But paralytic dementia is not a form of specific disease, not a late syphilitic manifestation, nor is it a form of degeneration depending upon the syphilitic poison for its origin. (6) The relationship of syphilis to general paresis lies in the facts that it is a widespread disorder in all communities, that it weakens the constitution and vitiates the blood in many in whom it infects, and that the system is thus prepared in many cases for the direct operation of the final etiological factors of general paresis, viz., alcoholism, excessive venery, heredity and mental overstrain and excitement.

The failure of syphilitic remedies to arrest the course of general paresis even when there is a history of syphilis preceding is further evidence of the difference of the processes. The two prominent suppositions current, explaining the mode of infection in syphilitic cases, are: (1) That the paresis is not due to the direct action of the syphilitic virus but that it is caused by a parasyphilitic poison the result of some remote nutritional or tissue changes, initiated by syphilis. (Fournier.) (2) That the cerebral tissues, profoundly exhausted by the infection of syphilis, are less resistant to the influences of ordinary causes. "It is significant," says Dercum, "that, for the most part, paresis in syphilitic subjects is a late development. In Houghberg's cases, eighty-one in number,

the onset occurred in from five to nineteen years after infection."

GENERAL PARESIS FROM SYPHILIS BEFORE MARRIAGE. WIFE INFECTED.

William B. J.; married; æt. 36; photographer; no neurotic history; first attack. He contracted syphilis before marriage; he had but slight secondary symptoms and married two years later. His wife had no children but developed secondary syphilis and has for years been a martyr to all sorts of troubles due to this source. She now has syphilitic laryngitis. The patient has had no cranial nerve paralysis but has been greatly distressed by his wife's sufferings and also by business worries. Eighteen months before admission, he began to lose his memory; four months before admission, he had severe headaches; hallucinations of sight; right pupil large; walk feeble, tottering; knee reflexes brisk. On admission, he showed confusion and a weak mind; restless and incoherent; pupils unequal; skin greasy; labial tremors and twitchings; great physical weakness; loss of vesical control; exaltation; optic discs hazy, probably due to old syphilitic retinitis. He had cystitis and once hemorrhage from the urethra and hematoma in right ear. Discharged uncured after a year. (Abstract, Savage, Transactions Ninth International Medical Congress, Vol. 5, p. 409.)

GENERAL PARESIS DUE TO CONGENITAL SYPHILIS.

J. B., æt. 18, paternal grandfather died in asylum; patient's father had been a "show case" of syphilis and he is now convalescing from an attack of hemiplegia and is pathologically exalted on every point, especially on his syphilis. The patient, as a small and sickly infant, had convulsions a few hours after birth, but had good health till fourteen; active, intelligent, with considerable musical talent. When sixteen years old he had convulsions for two days, followed by slight mental deterioration. At sixteen, fits returned producing more marked mental change, insomnia, change of temper and loss of memory. Nine

months before admission he had four very severe epileptiform seizures, and two months later he had one fit which left him "paralyzed." He has had several further attacks during the six months before admission. On admission, physiognomy characteristic of congenital syphilis; head small and misshapen, with other signs. His pupils were irregular and unequal, responding sluggishly to accommodation and light and very slightly to the sympathetic reflex. There is general tremor and twitching of facial muscles, plantar, knee-jerk and cremasteric reflexes very exaggerated and ankle clonus well marked; gait is uncertain, hasty and tottering. There is general cutaneous hyperesthesia; tongue movements jerky, and its extrinsic muscles tremulous; speech characteristic of general paresis. Patient smiles and grimaces. It is difficult to arrest his attention, as he is busily engaged in gathering up and secreting any rubbish that is about; he shows marked dementia. He can tell his name but almost nothing else. He says he is "very happy" and in a silly way spars with those about him, but a moment later he cringes as in fear and whimpers like a beaten cur. Two months after admission he had a slight epileptiform seizure, followed by paresis of right side, and spastic rigidity of right side; control over rectum and bladder lost; pupils widely dilated, unequal and sluggish to light. A few hours later, decubitus acutus formed over sacrum. He was unable to answer questions or comprehend directions; very weak, temperature 100.6°, pulse 90. Mentally apathetic. Two days later general spastic rigidity, marked twitching of all muscles, most pronounced on vastus externus; increased hyperesthesia over spine, temperature 102°, pulse 97. Next day, November 4th, rigors, deep flush on cheek, cardiac action feeble and excited, pulse 110, temperature 104°. He grinds teeth and makes masticatory efforts. November 5th, pupils regular and brisker reaction. Increase of patellar and cremasteric reflexes, temperature 100°, pulse 90. November 12th, slight improvement, temperature between 100° and 101°, pulse about 90; he is excited and destructive. November 17th,

several petechial spots appeared on chest, arms and legs and large purpuric extravasations over buttocks and abdomen. He became very prostrate, refused food and medicine, and gradually collapsed; temperature falling to 97° on the 20th. He died on the 21st, death being preceded by slight convulsive seizures. (Abstract, Norman, Journal of Mental Science, Vol. 39, p. 218.)

A CASE OF JUVENILE GENERAL PARESIS OF HEREDITARY SYPHILITIC ORIGIN WITH SPECIFIC VASCULAR CHANGES.

A young man, who died aged 21, had been healthy and had shown normal intelligence until his fifteenth year. At this time he had cramps and twitchings, apparently epileptic in nature and with a distinct aura. His intelligence rapidly diminished, speech became imperfect and vision failed. The pupils were dilated and unresponsive, knee-reflexes exaggerated, and there was some spasticity of the muscles. The patient was completely demented and could recognize no one except his mother. His father was syphilitic, a drunkard and a paranoiac. (Abstract, Von Rad, Philadelphia Medical Journal, Vol. 1, p. 634.)

A CASE OF GENERAL PARESIS OF SYPHILITIC ORIGIN.

A man, who had contracted syphilis seventeen years before and had been under careful medical treatment, recovered and was considered fit to marry. He married and lived a perfectly healthy life, free from worry or anxiety. But, when only a little over forty, he began to consider himself an old man. His writing was not so good as formerly. His memory failed and his energy and will power were wanting. A leading physician found, however, no signs of danger; but within a fortnight there were marked symptoms of acute general paralysis. (Abstract, Savage, *op. cit.*, Vol. 5, p. 394.)

A CASE OF GENERAL PARESIS IN FEMALE WITH HISTORY OF SYPHILIS.

I. M., æt. 32, insane two weeks, and died in one year from that time. She has had several miscarriages and the

children living, as well as the patient, show signs of syphilis; the husband's history confirms this conclusion. She had melancholic excitement for a short time during lactation; threatened to poison herself, to throw herself out of the window and kill her children; she had a strong animus towards her husband and entertained delusions regarding his relations with the nurses. In a few weeks she became quite demented, restless and destructive, tearing clothing, bed clothes, etc. Her speech became paralyzed, pupils unequal, which did not respond readily to light. In the eighth month of her disease she had an attack of hemiplegia, then became bed-ridden and at last sank rapidly and died. (Abstract, Campbell Clark, Mental Diseases, p. 220.)

A CASE OF GENERAL PARESIS OF SYPHILITIC ORIGIN WITH A REMISSION AFTER ANTISYPHILITIC TREATMENT.

Case of a gentleman who had been treated in the best possible way for the primary sore and subsequent stages of syphilis. About two and a half years after he was supposed to be cured of syphilis he had a very severe hemicrania for which he went south without benefit. When he returned, in addition to hemicrania, he had the usual initial symptoms of general paralysis. Under large doses of potassic iodid he apparently made a complete recovery, returned to his previous occupation and worked as well as ever. A few years later the writer found that the symptoms had nevertheless made regular progress, and he had no doubt as to what the result would be. (Abstract, Folsom, *loc. cit.*, p. 26.)

A CASE OF GENERAL PARESIS FROM ACQUIRED SYPHILIS.

A. B., æt. 41, van driver, no hereditary history of insanity, married twenty-five years, industrious, of anxious temperament, moderate sexual appetite, remarkably temperate. Six years ago he contracted syphilis and gave it to his wife. All active symptoms of it disappeared three years ago. Thirteen months prior to admission, his wife noticed that he could no longer perceive any odor and he

became sleepless, dull and very forgetful. Later complained of a fixed pain in the right antero-lateral cephalic region, which increased until it invaded the whole right side of the cranium and was extremely severe, especially at night. Apathy, insomnia and amnesia increased daily and taste hallucinations became prominent. His action became purposeless, movements uncertain, general tremor set in, he began to lose sexual power and desire, which latter had before been very strong. He had distressing dreams, that he had made a post-mortem on his wife and had removed all her viscera; he became violent, threatening and obstinate; and was annoyed and excited by visual hallucinations. Diagnosis, syphilitic tumor of brain with paretic dementia. On admission he had cachexia which had resulted in advanced marasmus; gait tottering, limbs ataxic in their movements, marked general tremor, fibrillar twitching of muscles of expression, which were also flattened; patellar, plantar and cremasteric reflexes exaggerated, well-marked ankle clonus. Cutaneous sensibility much increased. Tongue clammy and ataxic, in voluntary movements tremulous, indented and flabby when at rest; pupils small, irregular and unequal, sluggish to direct consensual and light stimuli and fixed to the sympathetic reflex. The movements for accommodation were spasmodic and ill-directed; pupillary reaction being slow and incomplete. Absolute loss of smell; he could not hold a pen or button his clothes; respiration quick and shallow, pulse small and feeble, tongue furred; pronunciation blurred and chippy. Voice resembled a hoarse whisper. His attitude was that of rapt attention, gazing into space, with a want of expression; he avoided conversation, and was very despondent—"I am done," etc. When put to bed after admission, he had a slight epileptiform convulsion, during which he passed urine involuntarily. For twelve days following, there was rapid mental and physical deterioration. He sat all day in one place, with limbs flexed, neck forward, gazing into the distance, and expression of intent listening. It was difficult to arouse him from this state; he talked of imaginary events. In two weeks, on March

12, he had a violent epileptiform seizure, the convulsions throwing him out of bed. Afterwards, an increase of dementia; he could not answer questions or fix his attention. He lay in bed in a state of general flexion; rigidity of the limbs, tendency to bed-sores, spasmodic masticatory and swallowing movements, constant grinding of the teeth; reflexes more exaggerated, and general hyperesthesia well marked. After a sinus on the foot, leading down to the bone, had healed (early April), he became bright, answered questions readily and volunteered remarks. But gradually his expression became more and more "wiped out," general and facial tremor increased, although on April 26 he spoke more intelligently than usual. Control over bladder was impaired. On April 30 he had slight but frequent epileptiform seizures after which expression was very fatuous; he would not speak, tongue protruded to right. On May 1 and 5 he had several seizures and became very weak; he was mute, fearful and emotional. He remained in this state till 8 P. M. on the 7th, when he was seized with epileptiform convulsions; left side became rigid, right relaxed, lower jaw drawn down and back, tongue directed to right, pupils dilated and insensible to light, plantar reflexes absent, temperature rose suddenly from normal to 102°, pulse 80, conjugate deviation of head and eyes to left and he died the same night. (Abstract, Norman, *loc. cit.*, p. 221.)

**Temperament.**—The idea has gained recognition that a temperament of general paresis exists, and certainly the reasons are credible. The temperament most frequently found among paretics is the intensely sanguine. It is found in those who are inordinately ambitious for wealth, fame or station, who lack self-control and are prone to excesses, who are restless and changeable in disposition; also among the fiery, choleric, and those with an obstinate disposition. Naturally these conditions tend to nerve irritation and exhaustion.

This extreme selfishness and lamentable lack of self-control, permitted to dominate a life, sometimes reaps in this disease a very natural, but most pitiful harvest.

PARESIS IN TWO INSTANCES ATTACKING BROTHERS.

Twin brothers had general paralysis, the disease beginning and running its course in one sooner than in the other. The two had lived in different parts of the kingdom and had no symptoms of syphilis or history of that disease.

Two other brothers at the same age, 32, became general paretics, though they had led utterly different lives, one being sober and industrious while the other was intemperate and licentious. They had inherited a tendency to break down prematurely along the nervous lines. (Abstract, Savage, *loc. cit.*, Vol. 5, p. 393.)

**Sex.**—Statistics uniformly agree in showing that general paresis occurs more frequently among men than women.

An interesting table by Regis,[1] made up from 7,552 insane and 868 general paretics, gives the following data: (1) In rural populations the disease is about one and a half times more common in men, and rare in either sex. (2) Among laboring classes of large cities it is three times more common in men and it is relatively frequent in both. (3) In the higher classes it is nearly thirteen times more frequent in men, and very common among men and rare among women. The number of paretics in proportion to the whole number of the insane is estimated by the same author as follows: (*a*) Among men, 3 : 100, and among women 2.13 : 100. (*b*) In working classes of large cities, men, 23 : 100, women, 7.7 : 100. In higher classes, men, 33.3 : 100; women, 2.58 : 100.

The ratio of liability, according to Sankey,[2] is: (1) Males of the lower class; (2) males of the upper

[1] Mental Maladies, p. 457.
[2] *Ibidem*, p. 283.

class; (3) females of the lower class, and (4) females of the upper class. There is a question as to whether males of the upper or lower class predominate, some authors reverse the order as given above.

GENERAL PARESIS IN A YOUNG WOMAN.

Marjory C., admitted, æt. 18, was the third of a family of seven. The two eldest are living and healthy, the third was the patient, the fourth was still-born, the fifth is alive and well. The two youngest were twins, one of them died soon after birth with convulsions; father was intemperate but denied syphilis. The patient's illness commenced four years before admission, as the result of a severe fall on the head. When picked up she was unconscious and blood was oozing from left ear, pus subsequently came out. Three days after the fall she suddenly became aphasic, left side of face twitched; she did not lose consciousness, and the attack passed off in ten minutes. She remained well for three years. A year before admission, her manner and mental capacity began to change. She could not keep her situation as a servant; she would pick up and eat crumbs of bread on the street, and could give no reason for doing so. Two months before admission she fell and was picked up unconscious, although the fall was not at all severe. She soon recovered consciousness and then it was noticed that her mouth was drawn to the left. She developed delusions; she thought she was the mother of a large family; she became suspicious of her relatives. When admitted the disease was well advanced. She walked with difficulty, muscular power much impaired; she was very deficient mentally; she seldom spoke or comprehended simple questions; memory not very good, especially for recent events, but she knew simple multiplication table; she was rather depressed in appearance. Tongue and lips tremulous, voice quavering, pupils unequal, did not react well to light and not at all to accommodation; knee-jerks and superficial reflexes slightly increased. She is undersized and undeveloped, and had never menstruated; no very

evident marks of syphilis. After admission, disease progressed rapidly, she became more mentally deficient, spoke less, until she finally ceased to speak; she became so weak that she was confined to bed. She lost flesh in spite of extra feeding; she had most careful nursing but died of exhaustion three months after her admission. (Abstract, Middlemass, Journal of Mental Science, Vol. 40, p. 38.)

GENERAL PARESIS IN WOMAN. CAUSE SHOCK. DIED IN THIRTY-THREE MONTHS.

M. E. J., admitted in June; female; single; æt. 35; servant. She had a child when 19. Three weeks after Christmas she was disappointed in marriage, became altered in behavior, at first was depressed and would cry for hours together, soon after began to talk nonsense, said she was going to Paris, talked much of her lover who had just married another; her mother kept her at home two months, when she became destructive and violent; she was then taken to the workhouse. On admission, mind appeared imbecile, she is noisy and violent at times, fairly nourished, gait tottering, articulation confused, says she has plenty of money, industriously inclined, offers to assist nurses. Tenth month, she has gained flesh. Symptoms of general paresis well marked, especially as regards articulation; at times excited, at times cries and roars lustily. Fourteenth month, motor paresis much increased, unable to stand, falls about, wet and dirty. Seventeenth month, articulation worse, is scarcely intelligible; she is confined to bed, muttering: you must have a million million cows to suck, thousands of dolls, beautiful cows—but she is stronger, pupils equal. Eighteenth month, able to leave bed, restless, would not remain in bed, she takes nourishment well. Nineteenth month, she is up and roaming about ward but gait unsteady. Twentieth month, excited, she tried to strike, articulation very indistinct, she dressed up a foot stool and carried it about as a doll. Twenty-first month, mind very imbecile, she is regardless of decency. Twenty-second month, paretic symptoms continue with restlessness, she wanders about and shows a disposition to

violence. Twenty-sixth month, she is still able to be up, mind demented, gait unsteady, voice tremulous, pupils equal; she is stronger than a month ago. Twenty-seventh month, she is stouter and well nourished, scarcely able to speak, still up and restless. Thirtieth month, general powers failing, speech very drawling, imbecile laugh, says she has a beautiful fortune left her, stuffs her mouth with food in eating, some difficulty in swallowing. Thirty-third month, pupils equal, she is unable to stand, lies in bed with knees up, difficult swallowing, grinding of the teeth, mind very demented, legs gradually more drawn up; she died from exhaustion without convulsions in the thirty-fourth month of the disease. (Abstract, Sankey, *op. cit.*, p. 321.)

PARESIS IN DISSOLUTE WOMEN.

Among unmarried women, prostitutes seem particularly liable to paresis, a fact noted by Snell and Cullerre, who found eighteen of this class out of thirty-nine female paretics. Of the three unmarried women paretics I have known, one was, I believe, of this class, and one of the others had been an unlegalized mother. (Abstract, Bannister, American Journal of Insanity, Vol. 50, p. 483.)

A CASE OF GENERAL PARESIS IN A GIRL. MOTHER ALSO HAD PARESIS.

A girl, æt. 14, suffered with general paresis. The mother and paternal grandmother both died in asylums. The mother was a general paralytic. There was no syphilis. The patient had been healthy until at six when she became restless and very destructive. Her mental state was one of complete dementia and she died when fifteen. (Abstract, Marr, Philadelphia Medical Journal, Vol. 4, p. 704.)

**Age.**—General paresis is a disease of middle life, much more common between the ages of thirty-five and fifty years than at an earlier or later period. It attacks men in the prime of life, when the brain and nervous system are in the highest condition of func-

tional activity and at an age when the most severe strains have to be borne. In later years the fortune is made, or the business life, with its pressing duties has grown familiar and the early anxieties and cares have been relieved.

The disease is very infrequent before twenty years of age and is unknown after the age of seventy-six. Its occurrence between nine and twenty years of age has been occasionally reported but the disease is then usually luetic in nature and runs its course quickly. At twenty-five it is infrequent, but the common age of occurrence is between thirty and forty. After fifty-five it is rare, but it has been known to follow late acquired syphilis and thus has been found in a few recorded instances in men between sixty and seventy-five years of age. Hirschl, for example, gives the case of a man who contracted syphilis in his fifty-sixth year and the symptoms of paresis began at sixty. The greatest number of cases shown in the early tables occur between the fortieth and fiftieth years, but late statistics show the greatest number to occur between thirty and forty years of age.

This reduction of the limit of the age of development of the disease has occurred within recent years and is due to the strain of modern life. The same condition exists, especially in the cities of all countries, where there is excitement and mental strain in business life. Mickle, in speaking of this feature of the disease in Europe, says: "The lowering of the average age speaks ill for the vitality of Western Europe, in as much as general paresis is the result of exaggerated expense of vital force and premature senility."

The cases found in early life are infrequent but occasional, and are called sometimes "developmental general paresis." For details see section under particular symptomatology.

Among women the disease is much less common, as stated more fully elsewhere, develops from three to five years earlier, and runs its course more mildly, requiring greater length of time.

A CASE OF GENERAL PARESIS IN AN OLD MAN.

S. B., æt. 61, but looking 70, married, an artist, no insane relatives, no previous attack of insanity. Present one dates back six months, due to pecuniary losses, showing itself with forgetfulness of small things. He became incoherent and childish, lost himself in his own house; mistaking his relatives; neglecting the decencies of society; restless, fidgety, and rubbing his head with his hands. On admission he had tremulousness of lips and tongue, with hesitation of speech; he became more restless and interfering and lost mental power. A month after admission he had a series of convulsive seizures from which he recovered, but was left weaker in mind; at the end of three months he had a further series of fits and again recovered. Mental and physical weakness increased and he died; pachymeningitis was found post mortem. These cases are often difficult to differentiate from those of senile dementia. (Abstract, Savage, *op. cit.*, p. 311.)

GENERAL PARESIS IN A MAN SEVENTY-FIVE YEARS OLD.

Mr. Y., æt. 75; four children; a retired merchant, gave up business five years ago. He had become erratic, had grown unusual and peculiar; he had had for some years "nervous dyspepsia." His mental vigor, however, seemed to increase. He became interested in social reform and took up hobbies which he rode for a while and then dropped; horses, dogs, poultry, etc. After the novelty had worn off, he would forget his fads entirely. He had attacks of depression, with tendency to seclude himself and to lose consciousness of his surroundings. Two weeks before admission he was more excited and erratic, trying to carry out absurd schemes and being violent when opposed. On admission, his physical condition

was excellent. Pupils contracted and immobile; tongue slightly tremulous, but not facial muscles; patellar reflex exaggerated; he was constantly moving about and talking about his plans. He had grandiose delusions about himself and his wealth. He was dictatorial, easily angered, and would not brook opposition; appetite good and bowels regular; he slept well at night; during the first three days resented restraint and sent telegrams for aid to many prominent people. He attacked his attendant frequently; and insisted that every one should obey because he was such a great man. The next day he said he had the greatest intellect in the world, could acquire any language in three weeks, no one could compare with him, etc. Three days later he was quieter and disclaimed all ill-feeling towards others. He was full of schemes for the material advancement of his friends in the ward; said he had been put in the institution by mistake and that his friends didn't know where he was. He addressed the envelope of a letter to "Mrs. R. two, three to fifty without the five; living there a long time, but the cry is coming, push along, better hearken, it is a loud cry especially in New York." His pupils were very contracted and did not react to light; marked tremor of tongue; no difficulty in articulation; marked arteriosclerosis; pulse 90 and incompressible. Said he was worth ten thousand millions and would buy the institution and make it a home for little girls from the city. His memory failed rapidly; appetite good; says he is very strong; the management of large affairs is nothing to him, etc. All his delusions were becoming more expansive. In a letter, he says: "In a recent investment, I have made a great deal of money; I was rich before and will soon be embarrassed with riches. I have bought Mrs. S.'s house just as it is, beautifully furnished for you and Mr. C. and would like to have you come here and live as long as you live, in the greatest plenty. Mr. C. will not have to work at all except for his pleasure. You will have your carriages and horses and everything like a rich woman. I have bought all the houses in Irishtown, cheap as dirt, but I will tear them down and have

rows of fine stores put up in their place. I send you $50 to-day and will send you plenty more soon. Oh, if I ain't a happy man! Come quickly, I have all the money you will ever need. You can have miles of hot-houses and millions of roses and chrysanthemums." Two weeks later, he was so rapt up in his ideas that he rarely spoke to any one; sometimes he did not eat. He thinks his food is prepared by a French cook and he constantly magnifies the quality of his food; his possessions include all of England and Ireland. He has risen to the formation of a new government and a reorganization of society. Finally he came to own Africa and then the world. The next month, his physical strength failed and he became more excited. His memory was gone and he was completely self-absorbed. He said: "I am God," "I am the Law," "Everything is according to my will." "Announce to the world that a new world has emerged from its hiding place of love and mercy to all men and it will enter at once upon its glorious mission of peace and good will to man." Then followed elaborate plans for the government and language of the new world, signing himself: "The Supreme Ruler of the new world, as of the old." One day, he was a loving, beneficent ruler; the next, an avenging deity, pronouncing curses on every one who came near him. He said "I am God and no one is fit to talk with me." The next day he boasted of his muscular power and wanted to spar with every one; said he was a second Samson. Next came an attack of depression, he being much of the time on his knees communicating with the deity. But he soon became exalted again; tried to take off his clothing, because in the new world no clothing is allowed. He never spoke directly to any one or answered questions. Sexual perversion appeared. After this, he was restless and excited and he had visual and auditory hallucinations. Once, he tore his mattress to pieces because the Empress of China was sewed up in it. His delusions became transient; that everyone who came near him meant to kill him; sometimes talked of suicide; thought he was a great military genius, Napoleon and

Nelson combined. After this, he had an attack of exhaustion, with muttering delirium, and picking at the bedclothes. During the next week, he failed rapidly. The arteriosclerosis increased. His pulse ran up to 120. He occasionally had an involuntary stool and passed his urine in bed. He thought his room was haunted by dogs and cats but he was generally in ecstasy. Three days before death he became stuporose and the day before he died he had right hemiplegia, without involvement of the facial muscles. (Abstract, Tomlinson, Journal of Nervous and Mental Diseases, Vol. 16, p. 772.)

**Race and Social Influences.**—So free are some countries from general paresis that for a time it was supposed to be confined to certain races, particularly to the Anglo-Saxon. This was based on the fact which now is well determined that it is unknown in Asia and to the savage in his native state. The disease accompanies the hurry and worry of the extreme struggle for both existence and high place in late civilized life, regardless of race or nation.

For example, the Scotch Highlander is free so long as he remains in his rural surroundings, with little to fire his ambition or imagination, but when he goes into city life and his energy and determination are bent on competition, he places himself in a position that may readily end in his being a paretic. The Irishman, too, almost entirely free from the disease at home, is not at all exempt from it in American cities, or in English factories and mines, where in the latter case, his life is made up of the hardest of work and the lowest and roughest of surroundings.

It is said the disease was unknown among the slaves of the Southern States and unreported among free negroes until they came to the centers of population. At present in Baltimore, as an instance, paresis claims the same percentage of negroes, according

to the population, that it does among Caucasians. In Norway and Sweden the disease is very rare. In France and Germany it is common among brain workers. In our own country and in England it is found most frequently in regions where competition has been strongest for several generations. In the Western States only one or two per cent. or less, are general paretics when coming from farm life; but in the Eastern States from ten to sixteen per cent. in the populous districts. Berkley[1] says: "It is in the cities where rum and syphilis dwell in close fellowship, where the strife and excitement of modern civilization is ever at flood tide, that general paresis is rife."

Spitzka,[2] from a careful study of the subject among the indigent insane of New York City, gives the proportion of general paretics as follows: Anglo-Saxon, 13.29; Celts, 11.58; Germans, 11.13; Hebrews, 10.29; Negroes, 8.82. He shows that the Anglo-Saxon race, the one of greatest speculative business tendencies and of highest intellectual development, has the largest number; that mere business exertion is not the most fertile cause from the low percentage of the Hebrew race; that intellectual exertion, per se, is not a cause, as shown by the lesser percentage of the Germans, who stand first in the abstract and speculative sciences; that a libidinous life is not wholly responsible, for if such a reflection were to be cast on any race in this respect it would be the Negro race, which shows the lowest percentage of general paresis, and to which, living in natural conditions, not compelled to enter into competition, the disease is unknown. The writer then adds: "The conclusion will seem reasonable that general paresis is more frequent with races of a high than of a low cerebral or-

[1] Mental Diseases, p. 194.
[2] Manual of Insanity, p. 181.

GENERAL PARESIS IN THE NEGRO.

ganization, because their higher civilization induces a restless mental activity and its attendant emotional strain. General paresis, therefore, is not a penalty of high cerebral development, but the expression of a discrepancy between the instrument and its purpose; of the inadequacy of some brains to support the strain to which the race, as a whole, is subjected."

It is generally agreed among alienists that the general conditions incident to the life of the poor predispose them to insanity, and it is found that a higher per cent. of these classes become insane than those of the middle and higher classes. Whether this rule applies to the distribution of general paresis is a mooted question. Some authorities, as Mickle, believe that paresis is more prevalent in the lower classes, while other observers of equal rank, for instance Regis, find that the upper classes suffer most from it. It appears from compiled statistics of the insane, for a series of recent years, comprising the insane of the Atlantic seaboard in and about the large commercial centers of Boston, New York, Philadelphia and Baltimore that the highest per cent. of general paresis among men makes its appearance in the better classes of society. Of 17,633 indigent male patients, 13.7 per cent. were general paretics, and of 16,956 indigent female patients, 1.3 were general paretics; of 3,005 private male patients the per cent. of general paretics was 16.2, and of 2,736 private female patients the per cent. was .18. The result, therefore, may be put down in the following order: (1) Men of the upper classes, (2) men of the lower classes, (3) women of the lower classes, (4) women of the upper classes. This proportion holds good equally for the local divisions in and about the four large cities mentioned, excepting in the case of Philadelphia; here among the women the larger per cent.

was with those of the higher classes. There is no explanation to offer for this variation from the general rule. Whatever may be the truth in respect to the general rule, one fact is assured—the disease is on the increase. The restless pursuit of wealth and social position, the anxiety and hurry, emotional strain and intellectual overwork, the unhygienic modes of life and especially of the laboring class, the excesses in excitement and excitants together with syphilis, tend to fix on modern civilization a most deadly foe, unknown in former times.

PARESIS IN A MULATTO WHO HAD BEEN FORMERLY A SLAVE.

G. R., a mulatto, male, age 22, of large stature, and fine athletic appearance, admitted July 5, 1855. He was a native of Maryland and had been a slave. His insanity was ascribed to excitement at a religious meeting. On admission he was tranquil and very docile, but was subject to short and very violent paroxysms, in which he was dangerously furious. His bowels were usually constipated before these attacks. He complained of want of feeling in his feet and the anterior surface of his legs. He had a great desire for education and often wept because he could not read. Once he escaped from the asylum grounds but was brought back and on the twenty-third day after admission killed himself by jumping from the asylum roof. (Abstract, Workman, American Journal of Insanity, Vol. 13, p. 22.)

**Excesses.**—Alcoholic and sexual excesses, indulged singly or combined, are especially potent causes of the disease.

With the excessive use of alcohol the effect in some cases is direct, and the most conservative of writers say that it is prolific in its tendency when intellectual or emotional strain exists. "A mere physiological hyperemia of the brain, under the use

of alcohol, may become pathological and determine the onset of paresis" (Dercum).

In a table prepared by Mickle from Reports of the Commissioners in Lunacy (England), by far the highest percentage (21.4) was attributed to intemperance in drink. Some other statistics give as high as thirty per cent.

Of sexual excess, there has been some confusion as to the excess producing the disease and the excess which is a common early symptom of the disease. It is an early symptom in some cases, as are many of the irregularities of the life in the early stages of the malady, but usually this as a symptom continues only a short time, while, if the facts can be secured in very many cases, a history of earlier excesses will be found. It is recognized as an exhausting cause and in conjunction with prolonged anxiety, or excessive emotional strain, or even exhausting physical work, it tends to bring about the conditions of the disease. Savage sums up his researches thus: "General paresis usually arises from a combination of causes, the most common direct cause being excesses of all kinds, whether sexual or alcoholic, which act more powerfully when associated with strain, worry and anxiety."

### GENERAL PARESIS IN WHICH EXCITEMENT AND EXCESSES PLAY A PROMINENT PART.

A case of this nature presented expansive ideas and projects, great restlessness and some excitement with moral defect, the physical symptoms being obscure. After three months an abatement of the conditions occurred, so that some of his friends insisted that a mistake had been made in diagnosis and he was set at liberty. But he soon plunged into a life of speculation, became indecent in language and lascivious in conduct, and died in less than

three years of general paresis. (Abstract, Stearns, *op. cit.*, p. 509.)

A CASE OF GENERAL PARESIS, THE RESULT OF INTEMPERATE PARENTS.

A boy, æt. 16, showed progressive paralysis, with complete fatuity and great emaciation, also contractures. He was in a very demented state a year before death. Father was English, mother Italian; both very intemperate. Parental neglect and semi-starvation were prominent features in the case. (Abstract, Wiglesworth, Journal of Mental Science, Vol. 39, p. 367.)

**Toxic Agents.**—Aside from the toxin of syphilis, that takes so important a rôle, as a causative factor in the disease, there has been of late years a tendency among many of the best neuro-pathologists to accept the theory, which was first put forth by Angiolla, that general paresis is a toxic affection produced by auto-intoxication, either directly or indirectly, through an interference with nutrition. It is in this malign way that lead (Kierman *et al.*) and tobacco (Guislain *et al.*) are supposed to act in the few cases that now and then are ascribed to these agencies as the exciting cause. According to these observers the baneful influence of alcoholic abuse and licentiousness, as well as mental overstrain, is to be sought also in these nutritional defects that contaminate the blood with poisonous products, which induce the degenerative changes in the nervous tissues.

**Injury to the Head.**—Trauma of the head is recognized as a cause of general paresis. In the four thousand two hundred and eighty-four cases collected by Mickle two hundred and eighty were attributed to such injury. Probably a large number of the cases with little mental derangement, found for the most part in general hospitals, are those which result from this cause.

Dercum[1] gives this theory in explanation: "Concussion of the brain seems to lessen its power of resistance, perhaps affects directly the vaso-motor control of its larger vessels and thus predisposes it more readily to attacks of congestion. It is very probable that sunstroke acts very much as does concussion of the brain, namely by predisposing the organ to hyperemia and by lessening its power of resistance." In ninety-seven of the above cases given by Mickle, sunstroke was the assigned cause.

In cases of trauma paresis may follow at once, but more frequently, it is years before the disease appears and then it is a gradual development.

### GENERAL PARESIS FROM INJURY TO THE HEAD.

One was a man in the dock yards, the other a butler. Both immediately developed general paresis. A predisposition already existed, the blow being an exciting cause. (Abstract, Rayner, Journal of Mental Science, Vol. 37, p. 488.)

### A CASE OF GENERAL PARESIS FROM A BLOW ON THE HEAD.

An engine-driver at the Hullborough Asylum six years before admission had a fall on the back of his head; he had not been the "same man" afterward. He became irritable, especially with his children; threw knives at them and tried to stick needles into their eyes. When he came to the asylum he was unsteady in his walk, which he attributed to "a stroke." Fifteen months afterwards he was far advanced in general paresis; his gait was bad; his articulation drawling; pupils unequal. He said he was "all right," but thought that some one had taken him out of bed during the night and set fire to it. (Abstract, Bucknill & Tuke, Psych. Med., p. 313.)

[1] Nervous Diseases, p. 670.

A CASE OF GENERAL PARESIS RESULTING FROM FALL ON HEAD.

C. H., æt. 56; fall on vertex some time before admission; insane immediately on receipt of injury, lasting four weeks with maniacal excitement. Present attack six months previous to admission. He was intemperate; pupils irregular; he showed ataxic articulation and expansive ideas, and general tremor with characteristic physical condition; apoplectic seizures seven months after admission; death from exhaustion fifteen months from onset of disease. (Abstract, Neff, American Journal of Insanity, Vol. 53, p. 41.)

A CASE DUE TO INJURY OF HEAD.

L. T., 53, moderate drinker, injury to head four months before development of disease; unconsciousness for a few hours; acute delirium for ten days. Immediately afterwards mental confusion, loss of memory, mental enfeeblement, apprehension, expansive ideas, ataxic gait, occipital headache, paresis of arms and legs, aphasic and hesitating speech; he had a fair realization of his condition; psychical symptoms increased. One month after admission, he had general clonic convulsions, terminating in paresis affecting arms and legs. Respiration embarrassed; patient died of asphyxia. (Abstract, Neff, *loc. cit.*, p. 41.)

INJURY TO HEAD THE PREDISPOSING CAUSE OF GENERAL PARESIS.

A man who had an injury to his head, became insensible, recovered and remained well for two years before symptoms of paresis set in. (Abstract, Mickle, *vide* Sankey.)

PARESIS FOLLOWING INJURY TO HEAD OF LONG STANDING.

The history of a case of general paresis showed that the patient had had an injury to his head many years before, and he bore the marks of cicatrices. (Abstract, Sankey, *op. cit.*, p. 287.)

### GENERAL PARESIS CAUSED BY THE FIRING OF A LARGE GUN.

A case of paresis was caused by the firing of a twenty-five-ton gun close to which he was standing. He had exalted delusions on admission, declaring that when he shook his fingers, gold dropped from them. After becoming quieter, more rational and his memory having improved, he fell into a state resembling catalepsy. About 6 A. M. of each day, he would pass into a condition of perfect stillness, lying flat on his back, not moving a muscle; this continued until 3 A. M. the following morning, when he gave signs of life by speaking to the attendant and swallowing food placed into his mouth. At 6 A. M. when the stage of stillness was coming on, he would perspire profusely, this gradually diminishing as the day wore on. His morning and evening temperature rose during this period and once or twice slight twitches were observed. He was apparently quite unconscious, pupils sluggish, sensation and motion suspended. When this periodic condition finally passed off after a month's duration, he was comparatively rational and had lost his more prominent delusions. Four months after, these delusions returned and the disease steadily progressed. On awakening to consciousness in the morning he was evidently under the influence of hallucinations of hearing. (Abstract, Bucknill & Tuke, *op. cit.*, p. 315.)

### CASES OF PARESIS FOLLOWING DEAFNESS, MOTOR NERVE ATROPHY AND TRAUMATISM OF BRAIN.

(1) G. B. A. became stone deaf in one ear several years before he developed general paralysis. Clouston believed the case was one of propagation, though he had no pathological proof of it. The patient was a medical man and thought that the symptoms of general paralysis which followed were due to the extension of the disease of his internal ear into the brain. (2) Professor Laycock used to quote a case of his where the disease had spread upwards from a Wallerian atrophy of one of the motor nerves of one of the fingers. (3) G. D., a woman of 36, passed gradu-

ally into quiet non-delusional general paralysis after a small punctured wound due to a pitch-fork in the top of her head, penetrating for about an inch into the brain. After death, all the convolutions of the cortex were affected, especially around the wound. (Abstract, Clouston, Mental Diseases, p. 390.)

**Epilepsy.**—Epilepsy is not a common predisposing cause of paresis, but its action on the brain, inducing intense cerebral congestion, does undoubtedly result in paresis at times, and the clinician should be aware of this occasional mode of development.

Epilepsy which may be the cause of paresis, must not be confounded with the epileptiform attacks which are episodic in nature.

Mendel gives two cases of paresis, one of a man of thirty-five, who had been epileptic from fourteen to twenty years of age, and the other of twenty-eight years of age, who had been epileptic from his eighth to his thirteenth year.

GENERAL PARESIS IN AN EPILEPTIC.

A commercial employé, 33, had been an epileptic. He lost his wife soon after marriage, causing him deep grief. He died of paresis in asylum three years after admission. He did not have an epileptiform attack in the asylum. (Abstract, Christian, American Journal of Insanity, Vol. 44, p. 498.)

GENERAL PARESIS DEVELOPING IN AN EPILEPTIC.

J. N., male, æt. 32; native of Ireland; inmate of the asylum for nearly five years; had been formerly epileptic, but not so latterly. His head was very large and, phrenologically, well formed. He was very quiet and childish; his general health feeble. Three weeks before death he complained of pain in various parts of his body and was confined to bed. On the day before his death, he had a fit of syncope, from which he soon rallied but showed

GENERAL PARESIS FOLLOWING EPILEPSY.

This patient had been an epileptic for twenty years before the symptoms of general paresis developed.

difficulty in breathing and depression. A few hours after he complained of pain in the lower part of his chest and died on the following morning. (Abstract, Workman, *loc. cit.*, Vol. 13, p. 18.)

GENERAL PARESIS IN WOMAN.—HISTORY OF EPILEPSY.—DURATION TWO AND A HALF YEARS.

K. W., a mistress, æt. 28, fair education, formerly a lady's maid. Admitted in August. She had been subject to epilepsy from the age of 9 to 12; father and uncle epileptic, and died imbecile; "on the fits leaving her she became altered in disposition," probably at puberty. She was always of a haughty, ambitious character; left service and was kept in luxury by a gentleman for some years; afterwards was left for six months, but still supplied with means; supposed to have become addicted to drink, became invalided and for a time was ill, nature of illness uncertain, had to part with all her goods; was maintained by her female companions; drank more and was at times muddled for a whole week together. Gradually became affected in mind, excited at times, talked to herself, when addressed would not reply, restless, would dress and undress repeatedly during the day, slovenly in her person, was taken to workhouse, where she was described as indecent in behavior, frequently exposing herself, talking to imaginary people, restless, said she had large property. On admission to asylum, not noisy, restless, answers questions in a whisper, talks to herself. Slept well, expression of vacancy and confusion, frowns and knits her brows, pupils equal and act well, does not know how long she has been in the asylum (came yesterday); cannot tell the day of the week, has no headache, very untidy in dress, tongue tremulous and clean, bowels not open since admission, no chest symptoms. Nothing peculiar in gait, pulse 80, she is pale, in fair bodily condition. First month, right pupil large; she is occasionally violent; walks with firm step. Second month, good bodily health, pupils unequal; she cannot understand what is said, right ear swollen. Sixth month, drawling tone, violent at times

and very noisy, walks well, but frequently falls as though her knees gave way. Ninth month, one morning she appeared to have lost use of left side, in afternoon walked with limp on left leg. Fifteenth month, more paralyzed, mind very imbecile, mutters unintelligibly, wet and dirty, swallows with difficulty, dejections passed unconsciously, sordes collected on teeth. Sixteenth month, pupil dilated; she is unable to stand, rallied a little in mind, swallows rather better, conjunctiva injected, failed slowly to eighteenth month; both pupils became contracted. Death by exhaustion. (Abstract, Sankey, *op. cit.*, p. 322.)

**Physical Overwork and Strain.**—Exhausting physical labor is to a certain extent undoubtedly an exciting cause of general paresis, especially when not counteracted by pleasant diversion, or by intellectual exercise. This is particularly true when acting upon those in whom the nervous system has lost the elasticity of youth and its ability to respond after fatigue.

If the condition of the system has been impaired by the use of alcohol, it is then especially susceptible to the effects of steady overwork. It is not the work that kills; seldom, perhaps never, does this of itself end in general paresis; but the endless monotony, the subjection to extreme heat, sudden changes of heat and cold, tend to wear on and weaken the central nervous system, and when this condition is associated with ill-regulated passions, strain, poverty, anxiety, or extreme disappointment, the brain falls a ready prey to paresis.

GENERAL PARESIS INDUCED BY EXPOSURE TO COLD.

The patient, a man, reached home, having been out in the snow all night and from this time had violent pains in his limbs. Two years afterward, his pains ceased and then he began to show symptoms of paresis. (Abstract, Christian, *loc. cit.*, Vol. 44, p. 496.)

**Intellectual Overwork, Anxiety, Mental Shock, Etc.**—Intellectual work done judiciously should never injure. Even neurasthenia claims a lower percentage of professional and intellectual men than those of other occupations. But forced intellectual labor, carried on with imperfect training, creates anxiety and uneasiness, continually weighs down the spirits, disturbs the sleep, wears with special force on the brain, and readily predisposes to paresis.

Again, the early training may have been thorough, but if one is obliged to work under keen emotional strain, or excessive anxiety, especially if fatal reverses threaten, the constitution must be strong and the control over self sufficient, if one is to escape from the ill consequences of such conditions. Paresis is well said to be the disease of civilization — the disease of mental stress. It is the worry rather than the work that does the damage. Savage says: "General paralysis occurs mostly in the anxious-minded, conscientious man, and as far as my experience among the middle classes is concerned, it is rather due to overstrain than to overwork."

Excessive worry and anxiety in one case may induce mania or melancholia, while in another paresis. Stearns refers to a table of six hundred and thirty-four cases of paresis, of which one hundred and six were attributed to "largely reverses in fortune, grief, anxiety, and distress arising from unfortunate social relations." Of Mickle's table, fifteen per cent. were assigned to mental anxiety, adverse circumstances, worry and overwork.

GENERAL PARESIS CAUSED BY MENTAL STRAIN, WORRY, AND ANXIETY.

An energetic manager of a successful business prosecuted some workmen under him for want of performance

of their duties. He failed to get a conviction, which led to a conspiracy of the workmen, and the result was that his life was rendered miserable by a system of threatening and intimidation. Sleeplessness, worry and loss of appetite were followed by the ordinary symptoms of general paresis. (Abstract, Savage, *op. cit.*, p. 284.)

GENERAL PARESIS FOLLOWING MENTAL SHOCK.

A man acquired general paresis who suddenly found that his son had forged his name for a large amount.

FOLLOWING MENTAL SHOCK.

A widow lost her only child by a fever in a few days while traveling abroad.

GENERAL PARESIS FOLLOWING GRIEF.

A man returning from India, lost his wife during the voyage and a child directly after landing.

FOLLOWING LOSS IN STOCK MARKET.

A speculator in the stock exchange, on losing a very large amount of money, acquired general paresis.

FOLLOWING GRIEF AND DISAPPOINTMENT.

A widower, left with two sons, after carefully superintending their youth, found, on their coming of age, that they both threw off their allegiance and launched into extravagance and vice, one of them speedily drinking himself to death. The other began to follow the same course. The father acquired general paresis on the death of the eldest. (Abstract, Sankey, *op. cit.*, p. 291.)

GENERAL PARESIS FROM OVER-JOY.

A hair-dresser's wife with a family of children had been in a state of destitution all winter. One morning her husband came home with the news that he had got permanent employment and gave her a sovereign which had been advanced to him. In the evening, he found that she had

spent the sovereign wholly in buying carpet-slippers which she said she meant to sell for a large sum. In this case the exciting cause was over-joy. (Abstract, Sankey, *op. cit.*, p. 291.)

### DISAPPOINTMENT THE EXCITING CAUSE IN A CASE OF PARESIS.

A navy officer became engaged to the adopted daughter of a wealthy bachelor uncle who permitted the marriage on condition that the officer should give up his profession and live near him, he making them a handsome allowance. But the uncle married his nurse and changed his will so that, on his death, his niece was deprived of all her expectations and her husband developed general paresis. The actual catastrophy only acted as an exciting cause probably for the husband had amaurosis at the time. (Abstract, Sankey, *op. cit.*, p. 290.)

# CHAPTER XVI.

## GENERAL PARESIS FOLLOWING ORDINARY INSANITY.

GENERAL paresis seldom occurs in ordinary insanity, yet, as pointed out by Mickle, the operation of new agencies, or the aggravation of old ones, may light up general paresis in a chronic case of insanity.

### GENERAL PARESIS WITH PERIODS OF MANIACAL EXCITEMENT ALONE FOR SEVERAL YEARS.

G. G., æt. 36. Irish, drunken and hard-working, married. He had an attack of "acute mania" in 1876, was sent to the asylum and "recovered" in five weeks. No evidences of general paralysis were noted. Again in 1878 he had a similar attack, but no diagnosis was made, although some suspicion of the disease was excited, and it was only after his third admission in 1879, that the disease was fully manifest. He died with it in 1882. His wife showed that he was weakened intellectually after his first attack. (Abstract, Clouston, Mental Diseases, p. 393.)

### GENERAL PARESIS WITH MANIACAL EXALTATION ALONE FOR MONTHS.

G. H. was acutely maniacal, very dangerous, homicidal, impulsive, strong-willed and unmanageable for twelve months, before there were any motor symptoms that enabled Clouston to diagnose general paralysis. From the state of his pupils and the expression of his face, he suspected it, but he could not say definitely it was any other condition than acute mania for the first year. (Abstract, Clouston, *op. cit.*, p. 394.)

### GENERAL PARESIS DEVELOPING IN AN IMBECILE.

M. Christian relates a case of general paresis in a man who, born in 1824, was under treatment from 1855 to 1860 by Calmeil as an imbecile. His friends assumed the care of him until 1878, when he again became disturbed, having delusions of persecution and manifesting marked mental enfeeblement. Cerebral congestions became frequent and general paresis appeared and followed a usual course. (Abstract, American Journal of Insanity, Vol. 37, p. 449.)

### DEVELOPMENTAL GENERAL PARESIS IN A CONGENITAL IMBECILE.

Margaret C., first admission, æt. 17, had no relatives to tell her history, but was regarded as a case of congenital imbecility. She was said to have been insane for at least three years; she was undersized, badly developed, with considerable mental enfeeblement. There was mild exaltation; when spoken to she usually smiled foolishly, said she felt fine, memory much impaired, no delusions, no motor symptoms. While in the asylum, she picked up a little, was slow in her movements, occasionally quarrelsome, liable to fits of rage or slight excitement, but generally happy. After sixteen months, she was transferred to lunatic wards of poorhouse and then boarded out in the country. Readmitted to asylum three years after discharge. During this time, almost nothing could be learned of her condition. She remained fairly quiet and manageable, but mental enfeeblement had steadily progressed; she became very weak in body, could not stand, some paresis of right side and considerable difficulty in swallowing. Her mind was almost a complete blank; she seldom spoke, voice monotonous and tremulous, lips and hands tremulous. The disease had reached a very advanced stage. She died ten days after admission of pneumonia in a phthisical lung. The case was not thought to be general paresis until post-mortem. (Abstract, Middlemass, Journal of Mental Science, Vol. 40, p. 37.)

A CASE OF GENERAL PARESIS RAPIDLY FATAL. THE PATIENT HAD RECOVERED FROM AN ATTACK OF INSANITY SEVEN YEARS BEFORE.

E. G., married, æt. 33; grandfather melancholy, parents healthy. The supposed cause of this attack was anxiety about money matters. There was a history of a previous attack of insanity, seven years before, with complete recovery. This attack began with hesitation in speech, great incoherence, sleeplessness, and refusal to take food. He fancied his shop assistants were being starved, and that people were removing goods without payment. He was found on admission to be weak, nervous and restlessly excitable. In three months, he was very feeble on his legs and hard to understand due to thick speech. Later he had a convulsive fit, from which he recovered, but remained in a half dazed condition. There was no special paralysis but great exaggeration in reflexes four months after admission. He was found one morning, unconscious, head turned to right, conjugate deviation of the eyeballs to right; pulse 170, respiration 55, temperature 105°; right pupil slightly larger than left; loss of power of rectum and bladder; Cheyne-Stokes breathing; he sank into deep unconsciousness and died. (Abstract, Savage, *op. cit.*, p. 296.)

GENERAL PARESIS PRECEDED BY ACUTE MANIA IN YOUTH.

G. H. A. had an attack of mania in youth, recovered, kept well, and performed his ordinary business, and at the age of 44 became a general paralytic. (Abstract, Clouston, *op. cit.*, p. 395.)

HYSTERICAL INSANITY FOLLOWED BY GENERAL PARESIS.

Woman, 33, an ordinarily violent, maniacal patient, somewhat hysterical; duration of insanity given as two years. The symptoms commenced by hysterical crying and agitation. Only motor signs, exaggerated reflexes and hysterical shaking; she gradually quieted down; paretic symptoms some months later, were typical during her decline and death; she died after one year and ten

months. (Abstract, Phelps, American Journal of Insanity, Vol. 53, p. 59.)

GENERAL PARESIS SUPERVENING ON CHRONIC MANIA OF LONG DURATION.

Jane M., æt. 40, Irish, occupation, domestic; duration of insanity, many years; diagnosis, chronic mania. History on admission, she had delusions of poison, and had haunted the Supreme Court for years, thinking she had a suit there. She improved physically, mentally she remained the same; she was removed to almshouse. Readmitted to asylum June, 1881, age 50, single. Excitable, very talkative, disconnected; thinks she has been poisoned by a certain doctor, who would put her out of the way if he could, that he might not be found out; that she has recovered a large amount of money from him on a suit; that the British Government has given her $15,000 to-day, that she was to be married to a lawyer last night and that another gave $2,000 to have her arrested because he wanted to marry her himself. She is below medium height and thin; right pupil small and inactive to light, left one more dilated, also inactive. Previous history: Always considered eccentric, not ordinarily intelligent; limited education, temperate habits, cheerful and frank. It is believed that a disappointment in marrying first caused her alienation. First decided symptoms observed twelve years ago; delusion that she was going to marry some rich man; she has grown thin and more demented, always harmless, happy and neat. October, 1881, marked delusions of hearing. She listens at the ventilators to people whom she thinks are talking to her. She says that her people are here; she is quiet, tractable, neat. April, 1882, she continues to hear devils at times, and is noisy; she scolds incoherently and breaks glass. November, 1884, she walks the floor, listening to voices which come from below; she is much demented. She says she has five gifts in her eye, that she must walk all the time and be fed on bread and water; left pupil large and immobile, lens cloudy. March, 1892, no great change, except that she is more

demented and senile. December, 1892, she had two epileptic convulsions, and has become untidy. January, 1894, she has had a few epileptic convulsions, usually at night; she is much demented. April, 1895, she is very demented and weak; she walks about and often falls and hurts herself; she is good-natured, very untidy. No convulsions lately. April, 1895, she had convulsions two days ago and another last night; she has been in bed for three days in a weak, confused way. August, 1895, pupils unequal, left dilated, both inactive to light; articulation indistinct, knee-jerks absent, walk feeble. She stands without swaying with eyes closed; feeble circulation, extremities blue and cold; she is getting gradually weaker and more demented; she died in October, 1895. (Abstract, Worcester, American Journal of Insanity, Vol. 52, p. 319.)

THREE CASES OF GENERAL PARESIS AND CHOREA.

In the first case, the patient had many attacks of chorea from infancy up to the beginning of his paresis at 33. In the second the paretic symptoms only partially affected the choreic ones. In the third case, the choreic movements were rhythmic or localized in a member in the form of paroxysmal attacks like the movements and contractions of Jacksonian epilepsy. (Abstract, Vallon and Marie, American Journal of Insanity, Vol. 51, p. 233.)

**Remissions.**—In some cases remissions occur, usually in the first or second stage of the disease, lasting from a few weeks to several months; even after a lapse of many years the disease has been known to return, but the average duration of a remission is from two to four months. A remission marks a cessation of active disease for the time, and many of the symptoms disappear, but the disease is not eradicated, only quiescent, and is certain to reappear, usually in a more active form. Some patients during a remission improve in mind and body equally; in

others the improvement in mind is noted without corresponding motor improvement.

Remissions have been known so complete that every motor symptom disappeared and the mind seemed as clear as in health; these at times have been pronounced cures, but generally it is believed that the disease does not let go its hold on the system and that it is sure to return, sooner or later. Blandford says of some such seeming cures: "These cases would be pronounced sane by any jury. They have either lost their delusions, or are able to conceal them. I have received letters from such written without a mistake. But those who had best recovered are long since dead, and I know of no one whose disease did not reappear in a longer or shorter time."

Remissions may occur at any time in the progress of the malady, but they shorten in duration as the disease advances. During these periods of cessation every trace of maniacal excitement and emotional display may cease, but some delusion frequently continues; or a slight tremor of the lip or hand, an inequality of pupils, some defect in speech, or in gait generally remains. If every other mental trace disappears, there sometimes develops some moral or esthetic eccentricity, *i. e.*, purposeless lying, irritability of temper, extravagance in buying; or the only sign of disease may be a stolid or troubled expression. The patient is apt to grow stout in body and become more feeble in cold weather.

Frequently the patient feels well; he converses intelligently, his interest in business returns and he desires to resume his former life. But if permitted to return to his occupation he soon becomes conscious of a weakness in continued mental effort, or if it be manual work he finds the bodily vigor does not return, and in either case he soon breaks down.

It is agreed that the enfeeblement of mind is incompatible with perfect responsibility; that under the best conditions the engaging in business should be discouraged; that only quiet surroundings, free from excitement and anxiety, should be provided. Medical care and treatment should continue during the remission, and a nurse or some responsible person should keep constant supervision, for the disease will surely appear again, and frequently its reappearance is marked by an outburst of excitement or violence, or by an epileptiform seizure.

GENERAL PARESIS WITH MARKED REMISSION.

A commercial traveller, with a history of drink, was admitted with all the physical and mental symptoms of general paresis. He went into a stage of complete paralysis and then recovered so that he took a situation again at £300 a year: he held it for eighteen months, returned to asylum and died in a short time of general paresis (Whitcombe).

REMISSION OF EIGHTEEN MONTHS IN SEA CAPTAIN.

A captain of a steamer came to asylum in a maniacal state. After a few months of this excitement, with exaltation, he quieted down and seemed to recover perfectly; he had no tremor or other signs of general paresis, although paresis was suspected. He commanded a ship eighteen months and the only difference noticed in him was that he was more placid and complaisant than formerly. He returned to England and rapidly broke down; he became demented, had extreme tremor and in two months died of epileptiform convulsions. (Abstract, Whitcombe, Journal of Mental Science, Vol. 37, p. 487.)

A REMISSION OF THREE YEARS OR MORE.

A man, æt. 31; after some eccentricities became maniacal, with much exaltation, extravagant boasting, letter writing to the queen, masturbation, self-decoration, etc. In two years this condition subsided and he became taciturn

and hypochondriacal, with loss of expression, thickness of articulation, fibrillar tremor and incapacity for exertion. These symptoms vanished and for three years he has been in constant and responsible employment. (Abstract, Mortimer, Alienist and Neurologist, Vol. 10, p. 489.)

### A MARKED REMISSION AFTER THREE YEARS' DURATION OF THE DISEASE.

Man, with well-marked symptoms of general paresis. The disease went on for two years and he nearly died of general convulsions but after a time began to improve; he remained in asylum three years, then went abroad and when heard of some years later was still well. (Abstract, Rayner, Journal of Mental Science, Vol. 37, p. 487.)

### A REMISSION IN A MEDICAL MAN.

A medical man had marked symptoms of general paresis, who had taken alcohol and all kinds of drugs. Gradually the symptoms passed away, he was discharged and two or three years after, he was again a "dispenser." (Abstract, Rayner, *loc. cit.*, p. 488.)

### GENERAL PARESIS WITH REMISSION OF SOMATIC SYMPTOMS.

A case in which, during periods of excitement and even in conditions of exaltation, the somatic symptoms, which at the best were very slightly developed, seemed wholly in abeyance. Competent experts could not be certain that it was general paresis, though it proved to be so. (Abstract, Stearns, *op. cit.*, p. 512.)

### A REMISSION OF MORE THAN THREE YEARS.

Patient, æt. 32, had been very restless and talkative, boasting of his riches and adventures. His account of his life was incoherent and contradictory. At the hospital he was singing and shouting and very destructive; eight months after admission he had a paroxysm of maniacal violence. On admission, he had numerous exalted delu-

sions, was king of the world, brothers were kings, could do whatever he tried, etc.; speech thick, and articulation at times difficult; his gait very unsteady; temperature 98° in the morning, and 99° in the evening. He was under treatment for a year when he began to improve and the exalted delusions passed away. The thickness of speech and difficulty in articulation remained, although in a less degree, his legs still were weak. He remained under observation for another year when he was discharged. He kept well for over three years when he disappeared from observation. (Abstract, Bucknill & Tuke, Psychological Medicine, p. 330.)

A REMISSION OF THREE YEARS. THE PATIENT RETURNED TO BUSINESS.

In one case, which has since been running rapidly a downward course, the remission lasted three years, during which time he attended to extensive commercial undertakings with fair success and took charge of several assignments. (Abstract, Spitzka, *op. cit.*, p. 215.)

A REMISSION OF FIVE YEARS' DURATION.

Patient admitted, supposed to have general paresis; maniacal excitement, inequality of pupils, blurring of speech, alteration of handwriting and knee reflexes affected. At the end of a year he had serious convulsions, with temporary loss of power on left side. He improved very much mentally and became apparently well but remained as a voluntary boarder until a few weeks ago—over five years. Then he became excitable; handwriting changed, left out words and letters. He is occasionally wet and restless; he is unmanageable, tumbles about, and he has exalted ideas and schemes. (Abstract, Whitcombe, *loc. cit.*, Vol. 37, p. 487.)

A CASE OF GENERAL PARESIS WITH A REMISSION OF MORE THAN NINE YEARS.

The patient had usual delusions, twitches of facial muscles, tremor of upper lip, thick speech, and weakness of

the knees, and was violent and destructive. He gradually calmed down, became quite rational, and lost all abnormal symptoms, except the tremor of lip and slight thickness of speech. He was ill for three months and was kept under observation six months before he was discharged. He is still alive, nine years since discharge, and draws his pension regularly. (Abstract, Bucknill & Tuke, *op. cit.*, p. 330.)

A COMPLETE REMISSION OF LONG DURATION.

A patient had been transferred to an asylum eleven years before, certified to be suffering from general paralysis. There was nothing which militated against such a diagnosis except that the man gradually improved, was discharged and for years after supported himself by his handicraft. (Abstract, Blandford, *op. cit.*, p. 307.)

A remission more or less prolonged sometimes follows fracture, abscess, erysipelas or some other intercurrent disease or episode.

GENERAL PARESIS WITH IMPROVEMENT FOLLOWING CARBUNCLES.

A man with general paralysis, who had been in the asylum three years, developed three carbuncles and was expected to die, but is now getting better. (Abstract, White, Journal of Mental Science, Vol. 37, p. 488.)

REMISSION AFTER A LARGE CARBUNCLE.

Hurd, H. M., has reported a case of remission after the patient had had a large carbuncle over the cervical vertebræ. (Abstract, Stearns, *op. cit.*, p. 508.)

GENERAL PARESIS IN WHICH MARKED IMPROVEMENT FOLLOWED ABSCESSES.

A man had passed through the early stages and his friends were awaiting his death. It was a question whether to let him die as he was or to evacuate three or four abscesses which he had. It was decided to evacuate them,

and he at once improved and has remained in a somewhat weak-minded condition for about six years. He can now play tennis well. (Abstract, Savage, Journal of Mental Science, Vol. 37, p. 488.)

A CASE OF GENERAL PARESIS IN WHICH A MARKED REMISSION OCCURRED AFTER AN EXTENSIVE SLOUGH.

Male, æt. 40; married; native of Michigan; formerly hotel proprietor and of average business capacity. His mother was intemperate and her family subject to phthisis. He was also intemperate, reckless in his expenditures and led a fast life. After marriage, he reformed but did not succeed in business. There was no history of syphilis. After two years of mental infirmity, he was admitted to asylum. At first, he had been depressed and indifferent to business. After a year, he developed delusions of grandeur. His bodily health improved, while his mind grew weaker. Previous to admission, he had remained in bed for several weeks and had shown a great tendency to sleep. On admission, he weighed one hundred and seventy-seven pounds; height medium; bodily health fair; pupils contracted and right larger than left; skin dry; articulation thick and indistinct; temperature 99°; great ataxia; expression dull and heavy; fine facial lines absent; replied to questions in a drawling way and often his replies were irrelevant; he had delusions of grandeur and he thought himself in perfect health. One month after admission, he was depressed, and sat quietly alone, apparently reading. He showed stupidity and torpor, was dull, anxious to go to bed and would fall asleep even while eating. Extreme debility and paresis were present. He required constant personal attention. His articulation was clumsy and his voice weak. His condition passed into elation. He became mischievous, threw clothing from the window, appropriated others' property. On January 6th, about a year after admission, he had an apoplectiform seizure, with choreiform movements of the head, twisting of the mouth, protrusion of the tongue and tossing of the arms. The axillary temperature was 103°; pulse rapid; pupils contracted. Tenth,

continues fairly comfortable in bed, with no convulsive movements. He is eating well and feeling "first rate." Fourteenth, he sits up and pretends to read a paper. Twenty-first, he does not recognize an old acquaintance. He is very untidy. February, he is able to be about; quiet; very feeble in mind; inclined to sit alone; inappreciative of what is said to him; gait feeble. He has sudden impulses to do violence. His handwriting is totally illegible. March, he is again elated and extravagant; he forms strange intimacies and promises feeble-minded patients work at immense wages. During April, he had rheumatoid affection of the joints. He was confined to bed and grew debilitated. There was tendency to engorgement of the right lung. May, he is able to be about. June, he is better mentally than at any time since coming under treatment; quiet, appreciative, and able to care for himself; attends chapel and entertainments; he is neat in dress; he shows a disposition to assist in work; he can remember names. The improvement followed the formation of a large gangrenous slough on the left heel. His articulation and gait are much better. He can write legibly. He is able to write letters; mind is quite clear; he is contented and cheerful; he has no delusions. August, he thinks himself well enough to be discharged but is not strenuous about going away. His writing improves. September, he is industrious and pleasant; enjoys the freedom of the grounds; plays croquet. On November 25 he was removed by his wife on trial. She regards him as well. His mind is not strong but the progress of the disease seems arrested. After his return home, he took care of horses. He had limited endurance, but could contribute materially to his family's support. Thirteen months after his discharge, he was in good flesh and seemed as well mentally as when he left the asylum. He has been working more or less; he shows a pleasant interest in the institution; recently he has experienced pain in the heel on which the slough appeared. Present condition about two and a half years after discharge—he has improved mentally; he has been out of employment but a few months since he left the

asylum; except for catarrh, he is in good bodily health; weight 165 pounds; no paresis in speech or gait; handwriting regular; he has full control of a livery stable and earns good wages; he keeps his books accurately; and he has good memory for remote and recent events. His disposition has changed. He used to be irritable and quick-tempered, but is now always good-natured. His habits are temperate and regular. (Abstract, Burr, C. B., American Journal of Neurology and Psychology, 1884.)

**Duration.**—It is difficult to mark a general average in the duration of this affection, for many factors combine to effect its progress. The special form taken by the disease in any case has probably the greatest influence as to the length of time required for it to run its course. The so-called ascending form, *i. e.*, when the spinal cord is affected first, is slow. If brain and cord are attacked at the same time the duration is usually short. Cases with expansive or exciting delusions proceed with greater rapidity than those of the depressed form.

Again the average course of the disease is longer in women than in men, in those who have lived a life of comparative comfort than in the poor, and in hereditary cases than in those not hereditary. All factors of a violently disturbing nature hasten the end, while all quieting influences such as the environment of isolation, cessation of business trials, and absence from home cares tend to prolong the life. Perhaps there is no factor which modifies the duration so largely as remissions, which may vary in length from a few weeks to many months. One of the difficulties of determining the duration is frequently the impossibility of fixing the time at which the disease actually began. The prodromal stage may run but a few months, sometimes a few years, and it is said in very exceptional cases that it may last nearly a life-

time. Archer gives the order of duration ascending as follows: Cases marked by excitement, by depression, by uniform dementia, by alternating excitement and depression, and by apoplectic attacks.

The disease is progressive and if uninterrupted by remissions, or other favoring circumstances, the patient goes steadily down to death, probably before two years from the time of the established disease. It is said that more patients die under two than over five years after attacked, but cases have been prolonged to ten, or even fourteen years or more; however, a case lasting ten years is very unusual. Clouston says: "So far as I am aware, no case with every mental and bodily symptom of general paresis, and diagnosed by many competent and experienced specialists to be such, ever lived so long as thirty years." Blandford gives an account of a patient, who lived twenty-seven years. French authors regard the average as less than two years, and some English writers place it at twenty-two months. Dercum says: "Males generally die within two or three years, females within three or four, while the great majority of all cases die within five years. Nothing more definite can be said than that the end may come within a few weeks after inception, either from maniacal exhaustion, a cerebral seizure, or decline of vital powers, or it may be prolonged; sometimes the patient is relieved by weeks of comparative freedom from disease, but it may be that he drags out weary months of continually increasing helplessness in both mind and body.

A CASE OF GENERAL PARESIS OF LONG DURATION.

A. B., æt. 55, merchant, no history of syphilis; temperate; insanity on maternal side of family. The family noticed, ten years before his death, that his speech was

clumsy and unintelligible, his walk was uncertain and hands unsteady. He made expansive statements as to his business; showed less restraint in the use of money; became very social; showed anxiety for nothing. Two years later, a diagnosis of paresis was made. The patient continued in business and, except that he began to lose interest in his affairs, no further mental symptoms developed. Speech was jerky and scarcely intelligible; movements of upper and lower extremities became very ataxic so that he was scarcely able to feed himself or walk without assistance. Examination during the last five years of life showed excessive tremor of tongue and muscles of face; ataxia and tremor of arms with ataxia and exaggerated reflexes in legs; pupils normal; speech more unintelligible; had maniacal and epileptic seizures several times a year. (Abstract, Fisher, E. D., Journal of Nervous and Mental Diseases, Vol. 18, p. 824.)

### GENERAL PARESIS OF LONG DURATION.

Savage gives a case of general paresis of long duration which was marked by severe convulsions, recurring during the greater part of the disease. Death occurred at the end of nine years.

### A CASE OF PARESIS OF FOURTEEN YEARS' DURATION.

Brush and Sinkler conjointly report a case of general paresis of fourteen years' duration. It was marked throughout its course by numerous epileptiform convulsions. (Abstract, American Journal of Insanity, Vols. 45 and 46.)

### GENERAL PARESIS OF LONG DURATION.

M. Lapointe observed a case of general paralysis of unusual duration in which the cardinal symptoms had gradually disappeared and had been replaced by simple dementia. The autopsy verified the diagnosis after the disease had lasted fifteen years. (Abstract, Journal of Nervous and Mental Diseases, Vol. 24, p. 314.)

A CASE OF GENERAL PARESIS OF LONG DURATION.

A patient who had general paralysis for sixteen years was a typical case, with periodical attacks of violence, sending telegrams continually, writing in a general paralytic style. (Abstract, Briscoe, Journal of Mental Sciences, Vol. 53, p. 883.)

A CASE OF GENERAL PARESIS OF LONG DURATION.

Lapointe related a case of general paresis lasting for twenty-five years, the diagnosis being eventually confirmed by post-mortem examination. (Abstract, Journal of Mental Science, Vol. 43, p. 383.)

A CASE OF GENERAL PARESIS WITH A LONG PRODROMAL PERIOD.

A baronet, who had shown symptoms of brain affection and epileptiform attacks, so far back as 1856, lived until 1883. (Abstract, Blandford, *op. cit.*, p. 299.)

**Prognosis.**—The prognosis is uniformly unfavorable. It is regarded as one of the most fatal of diseases. According to Ziehlen some years ago there were but a dozen cases of recovery on record. Spitzka gives an account of one, a rheumatic patient whom he treated five years after his discharge, and was unable to find any trace of general paresis in him. Another instance he records of a general paretic in Australia, who had escaped from the asylum, and five years later paid them a visit to show that he had recovered. Other authors report a few cases whose histories were followed for from six to ten years after discharge and no relapse had occurred, but one of these same authors expresses his doubt as to their having been genuine cases. It is the opinion of some writers that these and similar ones were not cases of true recovery. When death comes within two or three years after discharge the belief by them is that the patient dies

in a period of remission, and had he lived a little longer the disease would inevitably have returned, for from its nature it is necessarily progressive and fatal. Blandford says, "patients are dying of it (paresis) in all the asylums by the hundred yet the best authorities record no recoveries." A few cases of severe injury, or intercurrent disease, have been known to cause a form of recovery but it is after all only an arrest of the progressive enfeeblement, and the mental defect in time goes on. Remissions offer a ground of hope, but in a great number of cases they are rare, and after each remission the disease reappears in a more intense form. General paresis is thus far one of the most unfavorable forms of insanity as regards recovery and the duration of life.

### SUPPOSED RECOVERY.

Simon cites the case of a patient who had a remission and remained well for twenty-five years.

### A CASE OF GENERAL PARESIS WITH MARKED REMISSION, AFTER SUPPURATION THAT RESEMBLED A RECOVERY.

D. Mc., married, æt. 50, railway agent, no insane inheritance, the first attack of insanity requiring seclusion, although he had been peculiar for years before. Cause, over-work; sober, industrious; no syphilis; first symptoms were excitement, incoherent, rambling conversation, exalted ideas of wealth and station; benevolent, thought he had a secret which would benefit the human race. On admission he talked incessantly, with wild exaltation; he was sleepless, haggard, restless, and unable to stand still for a minute. He was treated with hyoscyamine without benefit, was incoherent; left pupil large; speech hesitating; took several hours to finish a short letter; wet and dirty at times, memory became worse. In three months he had a huge carbuncle on back of his neck; no sugar in his urine. After the carbuncle, his symptoms improved. He was discharged

well in five months' time. Some months later, he was allowed to manage his own affairs. He is now under treatment for anomalous paralytic symptoms, supposed to be due to syphilis, but is without mental disorder four years after discharge. (Abstract, Savage, *op. cit.*, p. 322.)

APPARENT RECOVERY FOLLOWING EXCESSIVE SUPPURATION.

In the only case of general paralysis that Savage says he ever saw, which apparently recovered, one symptom —cranial nerve paralysis—pointed to syphilis, though there was no other proof of the disease. The man got well and remained well for years, but died of obscure nervous disease, which was looked upon as specific. In another case with specific history prolonged remission has occurred and in both of these cases, excessive suppuration was the immediate cause of relief. (Abstract, Savage, *op. cit.*, p. 322.)

A CASE OF PARESIS WHICH PRACTICALLY RECOVERED.

A patient with typical symptoms of general paralysis, after six or eight months' treatment, was discharged on leave. After a year's leave of absence he was in command of a ship and his former employers could detect no loss whatever of his faculties. (Abstract, Savage, *loc. cit.*, Vol. 5, p. 402.)

APPARENT RECOVERY FOLLOWING A CEREBRAL SEIZURE.

Recovery occurred after an apoplectiform attack in a case of Schules. (Abstract, Spitzka, *op. cit.*, p. 216.)

**Termination.**—Death may come in one of many forms to terminate the course of the disease. It may come suddenly, in an apoplectiform or an epileptoid seizure, in paralysis of the heart, or even in choking, or the end may be hastened by tuberculosis, pneumonitis, edema of lungs, acute intestinal, renal or vesical troubles, deep bed-sores, septic infection,

or by embolism, erysipelas, phlegmon, suicide or trauma.

Extended dementia, or the alternating form of paresis, may prolong the duration, and the end come, finally, from simple exhaustion due to the general disease. Cases strongly hereditary run a longer course, and, as has been said, remissions sometimes postpone for years the fatal termination. "The disease is special," says Savage, "in so far that it ends fatally in nearly all cases, and in almost always the same way; and that, whatever the earlier symptoms may have been, the later ones are similar to a remarkable degree."

GENERAL PARESIS, DEATH IN THE MANIACAL STAGE; DURATION ABOUT A YEAR.

F. C., æt. 40. Surgeon in Indian army; was in the massacre of Cawnpore, escaped and underwent many risks and hardships. Some time afterwards, his friends wrote that he was much altered in behavior, subsequently, that he had a sunstroke. Ten years later and a year before admission he was induced to come to England; on the voyage he behaved curiously; also, his wife died, an event which seemed to excite him very much, and his behavior called for the interposition of the ship's authorities. On his arrival, his youngest child died. At home, he would carry his children around on his hip in the Indian fashion, calling on acquaintances and talking in an excited manner; he behaved strangely to his mother's servants, whom he alarmed. He invited women whom he met at night into his mother's house. Condition on admission: Five feet ten inches high, defective vision, some obliquity of the balls, and amaurosis of left eye; dark complexion; he has hemorrhoids and is subject to prolapsus; good pulse, no difficulties of digestion or chest signs. He talks incessantly about himself, his plans which he continually changes; he talks to everyone he meets, to his servants of his own affairs, which are of utopian character; he has marked elation of spirits and

feebleness of intellect; he talks much about marrying, thinks every woman he sees would exactly suit him and has made several proposals; he will extol and abuse the same person in the same breath. Expression, sleek; facial muscles relaxed; at first he refused to leave his home and became excited and angry, then came voluntarily and was easily persuaded. After arrival, he soon made himself at home, soon found occupation; he groomed his own horse, was agreeable and sociable but talked continually of his skill and reputation and wealth; he is very close in spending his money, which is his normal character. After three months: Mental characteristics the same, less excitement, a total absence of reticence. Occasionally he slurs in speech, eats largely, reads novels chiefly, and repeats the incidents to everyone. After six months: Health continues good, stammers rather more, mind weaker; he is full of a plan to make his escape and tells everyone about it; he eats enormously, rides and drives out daily. Eight months: He went into a public house leaving his horse with the attendant and bolted across the fields; he was found at his mother's, and brought back; mind more feeble; he made offers of marriage to two ladies in the presence of both. He writes numerous letters which are less connected in matter. Tenth month: He is more restless and irritable, more feeble, talks more of his great wealth and schemes; he was discovered concealing a pair of boots; his speech is more affected, with increasing difficulty in pronouncing the labials. Ten and a half months: After a bad night, he was excited early in the morning. Excitement continued during the next day; he again broke out, tore down the shutters in the night, threatened to murder the first person who came near him; he is highly ecstatic, very libidinous and elated, says he will be Emperor, that he will marry the Queen, and fifty other women. Motor difficulties well marked, articulation mumbling; next day he was calmer. Five days after the outbreak, he has continued excited and at times raves, talks incoherently, and imagines himself in communication with God, whom he addresses in a familiar conversational way;

he takes food well, but sometimes pours his soup, wine or medicine on his head. He does not exhibit so much sexual excitement, motor symptoms continue. February 5th, weakness increased; he complained in the evening of a sore throat and asked to have it examined, but spoke with a firm voice; shortly after, his powers quickly failed and he died from exhaustion. (Abstract, Sankey, *op. cit.*, p. 319.)

A CASE OF GENERAL PARESIS WITH A PERIOD OF COMPLETE REMISSION.—THE DISEASE RETURNED AND CONTINUED TO A FATAL TERMINATION.

Henry J. C., single, æt. 29; has one sister insane. The cause of present attack unknown; he has been a commercial traveller, intemperate, and worked very hard. The first symptoms appeared in August; he began to mope, and felt unable to do his work; he ate well, but slept badly. After the period of depression, he became emotional, excitable and threatening, also extravagant and generous; sleep became profound; he indulged sexually to a great extent; thought he was Christ. On admission was maniacal, dirty and destructive. An abscess hard to heal, containing gummous unhealthy looking pus, formed on his leg. Narcotics and sedatives had no effect until the period of excitement passed off of its own accord after severe purging and vomiting. In July, a year, he was reported convalescing; in two months he was sent on leave; the leave was extended until November, when he was discharged. He had not recognized the fact that he had been excessively violent and dangerous. He was re-admitted in September two years; he had been hard at work for a year, and had suddenly become extravagant, restless, and had ideas of grandeur. On admission it was found that his speech was greatly affected; he talked freely of his millions, and he was grand, benevolent, and demonstrative. At the beginning of the next year he lost strength and flesh, but no physical disease could be detected. Early in February, he wet his bed and had an epileptic fit marked

by half-open eyelids and lip muscles, inversion of right thumb, clonic convulsions of hands and feet; pupils minute, right the larger, and temperature 98°. In the evening of the same day, the fits returned, affecting both extremities; breathing was rapid, skin sweating; temperature 108°.5; he then died. (Abstract, Savage, *op. cit.*, p. 304.)

# CHAPTER XVII.

## PATHOLOGY AND PATHOLOGICAL ANATOMY.

### Pathological Anatomy.

### (*a*) *Macroscopic.*

**The Brain.**—The bone of the calvarium is in a proportionate number of cases, one third in the large series observed by Mickle, increased in thickness and density, with disappearance of the diploë. In a much less number it is thinner than normal, and very rarely it is abnormally soft. Often, also, the bone is congested and its inner surface may have a worm-eaten appearance. Occasionally there may be a distinct deposit of new bone, either in the form of a layer, or of one or more exostoses, on the inside of the inner table.

The dura is frequently thickened and vascular, sometimes but slightly. According to Mickle this change is found in about one half the cases. In a smaller number, one fourth, it is also more or less tenaciously adherent to the bone, between which also (dura and bone), there may be numerous vascular connections, consisting of thickened and tortuous vessels. The internal surface of the dura often shows evidences of internal pachymeningitis, usually of the hemorrhagic variety. This may be evidenced by either the existence alone of the characteristic false membrane and reddish-brown stainings, which mark the seat of previous hemorrhages, or more rarely, in addition marked hematomata, which may be present either externally, or internally, or both.

In the subdural space there is an increase of cerebrospinal fluid, which may be either pellucid or turbid. The arachnoid is always more opaque and usually is much thicker and tougher than normal, and either mottled with white spots, or striated along the fissures with white fibrous appearing bands. These changes are more marked over the fronto-parietal convexity and internal surface of the hemispheres, and often the interpeduncular space is bridged by a tough thickened arachnoid. Calcareous plates are occasionally found in the membrane.

Under the arachnoid, especially over the fronto-parietal regions of the brain, are seen covering the pia numerous varying sized dilated and congested vessels, lying in what appears like a milky or opaque jelly; if the arachnoid is perforated this material oozes out as a dirty opaque fluid. The pia is greatly thickened and may occasionally contain, either small bony plates, firm, fibrous, whitish nodules, or a few patches of lymph or pus. When the membrane is removed from the brain substance an intense edematous condition is found everywhere present, both in the fissures and over the surface of the convolutions and permeating the cortical substance. The membrane no longer readily separates from the brain cortex, but is adherent to it, especially over the apices of the convolutions, and the attempt at removal brings away also bits of the adherent cortex. These changes are well shown in Plate XII. The lobes of the brain, also, often are adherent one to the other, such cohesion being especially common between the frontal lobes.

In very acute cases these cerebro-meningeal adhesions may be absent and the meningeal changes consist of a slightly opaque arachnoid, an edematous and congested pia. In such cases the brain may appear to be increased in volume, owing to the intense

congestion and edema and, if the dura is removed, it may be impossible, owing to the projecting brain, to replace the calvaria. These changes, instead of involving entire lobes, may be confined to isolated areas.

In the more chronic forms, which are the more common, the brain is more or less flaccid, smaller and lighter than normal. The appearance of the brain cortex varies, the changes being most pronounced in the frontal region and shading off gradually toward the normal, as we pass backward. The one practically constant feature, ninety-four per cent. in Mickle's series, being that it is much reduced in thickness. The convolutions are also thin, shrivelled, or flattened. It may be softer, either in whole or in parts only, more rarely it is indurated, either in small areas, or diffusely, when it gradually shades off to normal, or to lessened consistence as we examine from the frontal towards the occipital region. Usually it is the seat of areas of hyperemia of more or less irregular distribution, but may be anemic. In the former case its color would be reddish, in various degrees, or mottled, while in the latter it is either pale, fawn color, dirty white, or slate colored. The strata are often indistinct.

The cortex is found hyperemic and softened in cases of comparatively brief duration, the longer the course of the disease the more apt we are to find it indurated and anemic; some authorities, Clouston and Berkley among others, describe the latter as the condition more commonly met with. Where the pia has been adherent the convolutions present an irregularly eroded appearance; as Clouston expresses it, they resemble the surface of a cheese where a mouse has been. This tearing off of the cortex has been termed decortication. The erosions may be red in color, or

APPEARANCE OF PORTION OF VERTEX OF THE BRAIN IN ADVANCED PARESIS. (Clouston.)

*a*, Skull-cap condensed. *b*, Anterior third, showing thickened milky arachnoid, dotted over with small white spots, with tortuous dilated vessels, and turbid fluid beneath. *c*, Middle third, showing the appearance after pia has been removed. The outer layers of gray matter have been torn away in irregular patches, adhering to the pia and removed with it. The parts so removed have left ragged eroded-looking spaces. *d*, The pia stripped from middle third, concealing posterior lobe, and showing the appearance of its inner surface with portions of the convolutions adhering to it. It is a tough, thick, spongy-looking texture, instead of the normal delicate, filmy, transparent membrane.

pale, according to the progress of the disease. They are most common in the frontal and parietal lobes and the gyri about the olfactory bulbs at the base, but may occur elsewhere. Mickle claims that they do not always correspond to the adhesions on the summits of the gyri, but may be found at the bottom of the fissures. Sometimes the entire depth of the gray matter comes off, leaving the white matter beneath. Decortication in greater or less degree, is the most characteristic and frequent of the gross lesions of paresis, but is not pathognomonic.

The white matter, as the gray, may be either of diminished consistence, when it is hyperemic and reddish, or mottled in color; or of increased consistence, when it is of an unnatural whiteness and may display a sieve-like appearance. The ventricles are dilated, filled with fluid and the ependyma is thickened, roughened and tougher than normal. In marked cases it is covered with granulations and feels distinctly rough to the touch. This condition is usually most marked in the floor of the fourth ventricle and there it often presents a grayish gelatinous appearance.

The ganglia at the base of the brain are often atrophied and they may be either softer or harder than normal. The pons and medulla[1] may also in some cases be the seat of morbid changes, either softening or induration being present, more rarely distinct atrophy may be seen.

Similar changes are sometimes found in the cerebellum. Mickle claims to have found adhesions of the membranes to the cerebellum in forty-four per cent. of his cases. Other writers deny that cerebellar adhesions occur.

[1] That the pons and medulla are anatomically parts of the spinal cord is believed by the writer, but as in most text-books they are considered as parts of the brain, they are here so included and will be, also, when the microscopic changes are described.

The olfactory bulbs and tracts are often atrophied and softened, and similar changes have been found in the optic nerves.

The prominent macroscopic changes in the brain and its membranes may be summed up as follows:

1. Thickening of the dura, with internal hemorrhagic pachymeningitis (about fifty per cent. of the cases).
2. An increase of the fluid in the subdural space and meshes of the arachnoid.
3. Opacity and thickening of the pia with adhesions to the cortex, causing portions of the cortex to adhere to the membrane, when it is stripped off (decortication).
4. General flaccidity and diminution of the weight of the brain and marked narrowing of the cortex.
5. Areas of softening and hyperemia and of undue firmness and anemia scattered over the cortex.
6. Dilatation of the ventricles, thickening and roughening of the ependyma and increase of fluid within them.

**The Spinal Cord.**—As has been noted in discussing symptomatology, the prominence of spinal symptoms varies. In those cases in which they are slight, the morbid anatomical changes present are slight, in those in which they are prominent, the changes in the cord and its membranes are likewise prominent. Alterations of some sort are found in most cases. The following changes may be present. The meninges are often thickened and hyperemic, opaque, granulated and adherent to each other and to the cord. These appearances are more apt to be found posteriorly. In a small number of cases evidences of hemorrhagic pachymeningitis, in the shape of recent or old clots, may be found. Clots are sometimes also found extra-dural.

The thickened pia surrounds the spinal nerves as they emerge, forming, as Mickle expresses it, muffs for them.

In acute cases the spinal membranes may be reddened, thickened, somewhat opaque and markedly edematous.

Mickle found in two thirds of his cases softening of parts of the cord; in one third, he found induration and in from ten to twelve per cent. atrophy. Either hyperemia, or pallor of the cord substance, may be found in a few cases.

In a considerable number of cases, 15.9 per cent. according to Bevan Lewis, sclerosis of the posterior columns and of the dorsal and lumbar posterior nerve roots, with thickening of their sheaths, similar to that in tabes, is found. When found, the sclerosis is usually most marked in the lower part of the cord, becoming narrower and more confined to the columns of Goll as it ascends, to cease at the floor of the fourth ventricle. In other cases the sclerosis is confined to the posterior commissural zone and the posterior median columns (columns of Goll), the root zones escaping.

More rarely a secondary descending degeneration of the pyramidal tracts occurs either alone, or associated with the posterior sclerosis. Either a diffuse slight sclerosis, causing generally increased hardness, or a slight diffuse myelitis, causing general softening, may be occasionally present. Atrophy of parts of the gray matter, especially the horns, is sometimes present.

### (*b*) *Microscopic.*

**The Brain.**—The microscopic changes found in general paresis are manifold; none however are strictly characteristic of the disease and it is doubtful if it

can positively be diagnosed with the microscope.[1] The main interest, of course, attaches to those found in the pia and cortex. These changes may be classified as follows:

1. Those in the blood-vessels of the cortex and pia, and the perivascular or lymph-spaces.
2. The neuroglia.
3. The nerve cells and fibers.

1. **The Blood-Vessels.**—The walls of the capillaries are thickened and present a granular appearance, with an increase in the number of nuclei that are normally present there. (See Plate XIII., Fig. 2.) Frequently there is some migration of leucocytes, which are found in the perivascular spaces.

The adventitia of many of the pial and intracerebral arterioles is, according to the state of the disease, infiltrated more or less densely with small round cells, which in marked examples are found also in the neighboring nervous tissues. In advanced cases the cells may be so dense that the vessel wall is hidden; indeed, Mickle has compared the appearance to that of a muff surrounding the vessel. This infiltration is probably due to a periarteritis. (Plate XIII., Fig. 3.)

The perivascular, or lymph spaces finally become full of these cells, so that finally many of them become impervious to the passage of the lymph. Hematoidin and cellular debris are also found in these spaces. Some, owing to the pressure of the fluid in attempting to get through, are dilated.

In addition to the vessels so affected W. Ford Robertson[2] lays stress upon the large numbers of capillaries and arterioles that are affected with that form of degeneration known as hyaline fibroid degen-

[1] *Vide* O. Schmidt, Allgemeine Zeitschrift für Psychiatrie, 54, 1897–1898, p. 178.

[2] Pathology of Mental Diseases, p. 140 et seq.

eration, or arterio-capillary fibrosis; this, while present to a greater or less extent in all persons after middle life, is especially prominent in cases dying of general paresis. It is characterized by the proliferation of the endothelial cells, the formation of new fibrous tissue, and finally by a hyaline degeneration of these cells and fibers, causing the vessel to present a thickened, vitreous appearance.

In the arterioles and venules affected with this form of degeneration the adventitia is converted into a broad, homogeneous band of regular outline. In these vessels there is also usually some degeneration of the middle coat. The short vessels of the first layer of the cortex are particularly affected.

Other vascular changes, not so commonly met with, are pigmentation of the vessel walls; dilatation of the vessel; obliteration or narrowing of the lumen.

2. **The Neuroglia.**—Those elements of the neuroglia known as Deiters', or spider cells present marked changes in the affection that we are considering. Bevan Lewis[1] terms these cells and their processes the "lymph connective tissue of the brain" and first advanced the view that they play some part in "the reabsorption and distribution of the effete material and surplus plasma." By means of methods developed by him, it is found that these cells throw off two sets of processes: (1) "An enormous number of extremely delicate fibers, which spread into the intervascular area around, and (2) a much thicker, coarser process, which often, after a tortuous course, ends in the adventitial sheath of the blood-vessel." (See Fig. 4.) These processes, in crossing the perivascular canal, give off a number of delicate processes that traverse the canal. This view of the

[1] Mental Diseases, 2d Edition, p. 98 et seq.

FIG. 4.

Swollen degenerated Nerve-cell.
Spinous extensions from vascular walls.
Degenerating Nerve-cells attacked by Spider-cells.
Spider-cell with its vascular process.
Vascular process of Spider-cell.
Arteriole surrounded by Spider elements.

DEGENERATION OF NERVE-CELLS IN CORTEX WITH PROLIFERATION OF THE SPIDER OR SCAVENGER-CELLS. SECTION FROM FIFTH CORTICAL LAYER OR MOTOR REGION.
X 210. (BEVAN LEWIS.)

function of these cells has been accepted by other, but not by all pathologists.

In general paresis there is a general hypertrophy of this system, the cell body becomes considerably enlarged, often exhibiting subdivisions of the nucleus, and stains much more deeply with aniline than does the normal cell.[1] The processes also stain deeply and the vascular processes, which stain still more deeply (those attached to the blood-vessels), are increased in size and often in number and are seen to be attached to the vessel by a nucleated mass of protoplasm. The other processes are often seen to surround and embrace the nerve cells. (See Fig. 4.) These changes occur in the later stages after the perivascular spaces have become blocked up, (see p. 252) and it is proper to state are not always found markedly developed. In a series of sixty-four cases, examined by Ford Robertson, only one third showed them to a great degree. According to Bevan Lewis[2] they are due probably to an effort of these cells to remove the effete materials and cellular debris that are found in the brain from degenerated nerve cells, and whose removal is hindered by the obstruction of the perivascular spaces or lymph channels. He often speaks of them as "scavenger cells."

3. **The Nerve Cell.**—Various forms of degeneration of the neurone are met with, all of which may also be found in other conditions. That most commonly met with is the pigmentary or yellow globular. Bevan Lewis was the first to lay stress upon this form, which he termed pigmentary or fuscous. It consists in the early stages of the formation below the nucleus of a quantity of yellow pigment; at this time also the

[1] Normally the cell body and processes, *i. e.*, Deiters' cells, do not stain at all with aniline, the nucleus alone staining faintly.

[2] *Loc. cit.*, p. 183.

cell body becomes swollen, and the protoplasm stains more deeply than normally. As the process continues the amount of pigment increases, the nucleus is displaced and even it sometimes becomes pigmented. The protoplasm stains more faintly than normally (chromatolysis) and the processes begin to disappear until finally none are left, the nucleus disintegrates and the cell becomes a mass of translucent colorless finely granular material that practically does not stain at all. (See Plate XIII., Fig. 5.)

Bevan Lewis believes that the pigment accumulation is "invariably a witness of bygone functional activity" and that its increase is due to an over-activity of the cell. This view is also held by Schafer, but is combated by many pathologists, notably Marinesco and Robertson. The different stages in the process have been well summarized by Bevan Lewis[1] thus:

*Period of Over-Activity.*[2]—(1) Swelling of cell with increase of pigment. (2) Advancing degeneration, cell more globose, protoplasm retracting. Sclerotic investment of cell and cincture formed.

*Period of Diminished Activity.*—Nucleus eccentric, deformed, fatty, with narrow encircling zone of protoplasm. Processes few; these, as well as cell-protoplasm, faintly stained.

*Period of Absorption.*—Fatty transformation and decoloration of cell. Atrophy with shrinking or rupture into a heap of granules.

Agapoff, who examined the brains of six cases of general paresis, lays stress upon the number of the

[1] For further description of this process see Mental Diseases, 2d Edition, Bevan Lewis, p. 527 et seq.; W. Ford Robertson, Pathology of Mental Diseases, p. 243 et seq.

[2] It must be borne in mind, as has been before stated, that many pathologists do not believe in the existence of a period of over-activity, but that the entire process is due to one of diminished activity.

pyramidal cells in which the gemmules of the dendritic processes were either lost entirely, or were diminished in number.[1]

There is also disappearance of the medullated fibers in portions, principally the frontal and antero-parietal of the cerebral cortex. There is considerable loss of the tangential and also of the radial fibers. This is but a natural consequence of the degeneration of the cell bodies above described. In the nerve fibers of the white matter changes are also found. Patches and streaks of gray degeneration were found in the immediately subcortical substance and Tuczek observed a like degeneration in the fibers between the cortex and medulla, which sometimes appeared as a gray streak or stripe. Similar changes may be found in the corpus callosum, fornix, septum lucidum and crura cerebri. In the optic thalami, corpora striatæ, pons, medulla and cerebellum, vascular changes and cell degeneration, similar to those occurring in the cortex, are more or less markedly present.

Degeneration of the cells constituting the bulbar nuclei is a most common lesion. Its relationship with many of the characteristic physical symptoms, viz: weakness of the facial muscles, tongue, etc., is apparent.

The important microscopic changes in the brain may be summarized as follows: An increase in the number of nuclei in the walls of the capillaries with a thickening and granular appearance of their walls. A more or less intense round-cell infiltration of the adventitia of the arterioles. Blocking up of the perivascular, or lymph, spaces with leucocytes, hematoidin and cellular debris, with here and there dilatation of these spaces. An affection of other vessels

[1] Neurolog. Centralblatt, April 1, 1899.

with that form of degeneration known as hyaline fibroid degeneration, or arterio-capillary fibrosis.

A marked hypertrophy and increase in number of those elements of the neuroglia, known as Deiters' cells, the lymph connective tissue of Bevan Lewis, this being especially marked along the course of the blood-vessels. Degeneration of the nerve cell, the most common being the pigmentary or yellow globular form and consequent disappearance of nerve fibers in different parts of the brain.

**Spinal Cord.**—The relationship between microscopic changes found in the cord and the prominence of spinal symptoms is identical with the statement made on p. 250 in describing macroscopic appearances. The walls of the blood-vessels, especially those of the posterior columns, are thickened. The appearance, however, usually differs from that of the cerebral vessels, in that the lumen is diminished and the muscular coat hypertrophied. The lymph channels are not blocked up or dilated, and there is no nuclear proliferation. Bevan Lewis looks upon this change as "one of simple compensatory hypertrophy, induced by the engorged condition of these vessels demanding increased contraction on the part of the arterial muscle to carry on the circulation of the cord." The spider, or Deiters' cells also hypertrophy and multiply,[1] the proliferation is most marked along the course of the blood-vessels. According to the tracts involved, as outlined in the description of the macroscopic changes on p. 251, the microscopic evidences of degeneration are found, *i. e.*, loss or swelling of the myeline of the medullated fibers, or a granular condition of it with distortion and interruption of the nerve fibers. They

[1] This hypertrophy is also found in chronic inflammatory and other disorders of the spinal cord.

are usually most marked in the posterior columns, in some cases resembling in character and distribution the appearances found in tabes, in others the root zones escape.

The question frequently arises concerning the relationship between general paresis and tabes dorsalis. It seems safe to say that the opinion of most neuropathologists is that they are the same disease. As Dercum has expressed it, general paresis is a tabes of the brain. Mills also believes that they are the same process, in the one case affecting cerebral neurones mainly, in the other, spinal, while in a smaller group, both sets suffer and the clinical symptoms of general paresis and tabes are combined (see symptomatology). At a meeting of the London Pathological Society,[1] at which most of the prominent English neurologists and neuro-pathologists were present, this subject was discussed. Mott, who opened the discussion, held that the two conditions are one and the same morbid process, affecting different parts of the nervous system. This view was concurred in by most of those present. Among those who hold similar views may be mentioned Raymond, Flechsig and Nageotte; on the other hand Ballet, Joffroy, Geil and Hoche do not believe that the lesions are of the same nature.

Besides the variations above described in the cord, we find in other cases both the lateral and posterior columns are affected, in the former the change is usually most marked in the dorso-lumbar region. Rarely degeneration may be found in the anterior columns, always, however, in connection with disease of either the posterior or lateral columns or both. Degeneration of the cells of the anterior horns is also usually more or less prominent.[2] More or less

[1] Transactions London Pathological Society, 1900, 11, 339.
[2] Orr & Rows, Brain, 1901, p. 236.

degeneration of the cells in the posterior root ganglia may also be found.

**The Peripheral Nerves.** — Changes in these, both cranial and spinal are also found. Dr. Alfred W. Campbell[1] found extensive diseases of the pneumogastric and less extensive diseases of the phrenic nerves. More or less degeneration of the optic nerves may occur. The nerve fibers of the anterior nerve roots are degenerated and the connective tissue is increased. These changes are usually most marked in the lumbar and sacral regions.

The mixed spinal nerves also show evidences of degeneration. Campbell says this is a mixture of a parenchymatous degeneration (degeneration of the medullary sheath; swelling and atrophy of the axone), and interstitial inflammation (overgrowth of the connective tissue). These changes are most marked in the nerves forming the lumbar and sacral plexuses. The ganglia of the sympathetic system sometimes show evidences of degeneration of the nerve cells and increase of connective tissue.

The muscles including the heart and diaphragm show degenerative changes, become fatty, and show more or less complete disappearance of muscle fibers, with proliferations and increase of the nuclei of the sarcolemma and connective tissue. The number of motor end plates in the cases examined by Campbell was lessened and some were in process of degeneration.

**Pathology.** — The starting point, whether in the blood-vessels or nerve elements, of the lesions above described, has caused much discussion and able observers are ranged upon each side. One of the most

[1] Journal of Mental Science, April, 1894.

prominent and earnest advocates of the view that the primary seat of the lesions is the blood-vessels is Bevan Lewis.[1] He claims that there are three stages in the development of the morbid changes, viz:

1. A stage of inflammatory change in the *tunica adventitia* with excessive nuclear proliferation, profound changes in the vascular channels and trophic changes induced in the tissues around.

2. A stage of extraordinary development of the lymph-connective system of the brain, with a parallel degeneration and disappearance of *nerve elements*,[2] the axis-cylinders of which are denuded.

3. A stage of general fibrillation with shrinking, and extreme atrophy of the parts involved.

He believes that this is an irritative process of the arterioles of the pia and brain, but lays no stress on the changes in the walls of the capillaries.

Berkley also advocates the view that the blood-vessels are the primary seat of the lesions. He says:[3] "While it cannot yet be regarded as an established fact that vascular disease precedes all cases of paretic dementia, this theory, while affording a ready means to account for the pathological etiology, would enable us to follow out the various steps in the clinical picture of the disease."

"Thus, the first stage, that of mental change and irritability, would correspond to the inception of the vascular disease, slight proliferation of new elements in the sheaths, on account of which the nutrient serum finds some difficulty in finding its way through the thickened arteriole-capillary wall. The second stage, that of active delusion and motor excitement, would come when the nuclear proliferation, dilatation of the

[1] Mental Diseases, 2d ed., p. 552.
[2] Italics author's.
[3] Mental Diseases, p. 202.

lymph space, and filling up of the same with cells and cellular debris, would be sufficient to dam back into the brain tissue the devitalized serum, inducing both edema and cell hunger from the imperfect circulation of the necessary nutrient fluid. Many of the epileptiform and apoplectiform crises, no cause for which can be found in the naked-eye examination, might readily be due to the plugging of the perivascular lymph channel, either temporarily with leucocytes, or later permanently with proliferated round cells." "The final stage, that of dementia, would occur only when the arteries are profoundly diseased, and their surrounding canals completely obstructed by the cellular overgrowth and accumulation of debris from many sources. According to this view the degeneration of neurones and neuroglia play an entirely secondary part, the cell atrophy and scleroses of the tissue following the lesions of the blood-vessels."

He further says (*loc. cit.*, p. 205): "That in the very earliest obtainable autopsies the protoplasmic alterations found are most indefinite in comparison with those in the vascular apparatus." He mentions a case that died at the beginning of the second stage, in which the vascular lesions were intense and the implication of both the vascular and support neuroglia was profound, but the investigation of the neurones gave practically negative results with modern methods.

W. Ford Robertson[1] summarizes what appears to him to be the most probable hypothesis regarding the pathogenesis of general paresis as follows: "The disease depends upon the occurrence of a general toxic condition, the exact nature of which is still

[1] For an exhaustive discussion of both sides of the question with references, see Pathology of Mental Diseases by W. Ford Robertson, p. 344 et seq.

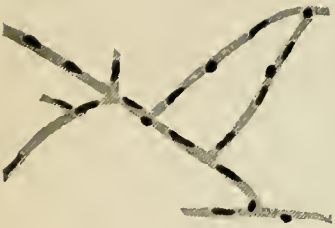
FIG. 1.—Normal capillaries of human cerebral cortex. Bevan Lewis's fresh method. × 500. (Clouston.)

FIG. 2.—Capillaries of cerebral cortex from a case of advanced general paresis, showing marked thickening and granularity, and increase in number of nuclei. Bevan Lewis's fresh method. × 300. (Clouston.)

FIG. 3.—Greatly hypertrophied neuroglia cells, surrounding an arteriole in the deepest layer of the cortex, in a case of advanced general paresis. Aniline black fresh method. (× 500.) The arteriole shows periarteritis. The nerve-cells have for the most part disappeared. Those that remain show advanced pigmentary degeneration. (Ford Robertson.)

FIG. 4.—Normal nerve-cell, showing the chromophile elements of the protoplasm and the cone of origin of the axis-cylinder process. (Ford Robertson.)

FIG. 5.—Three cortical nerve-cells from a case of advanced general paresis, showing slow degenerative changes of primary type; *a*, cell with large pigmentary accumulation in the protoplasm and pallor and slight disintegration of the chromophile bodies; *b*, advanced chromatolysis; *c*, advanced chromatolysis, loss of processes and commencing disintegration of the nucleus. (Ford Robertson.)



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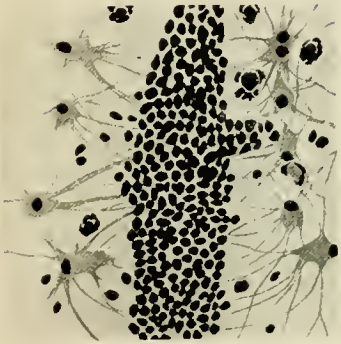

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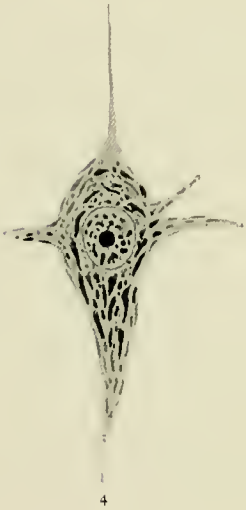

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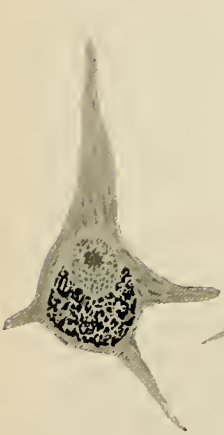
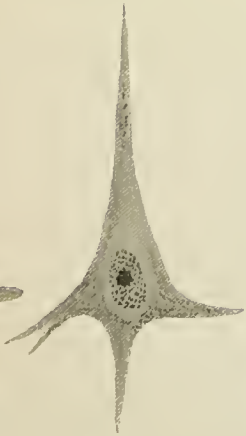


5 *a*



5 *b*

5 *c*

obscure, but which is certainly in many cases the result of antecedent syphilitic infection. The first important effect produced by the toxins is a proliferative and degenerative change in the walls of the vessels of the central nervous system, including those of the capillaries of the cerebral cortex. This alteration in the capillary walls interferes in various ways with the nutritive exchanges between the blood and the cerebral tissues. Consequently the adjacent cortical neurones undergo primary degeneration and the neuroglia also tends to suffer certain morbid alterations. At the same time these tissues are to some extent affected directly by the toxic agents circulating with the blood." He places special stress upon the influence of the changes found in the capillaries and is a strong believer that these vascular lesions are due to a toxic condition. This view first advocated by Angiolella is held by many, even the majority of those who do not believe that the blood-vessels are first attacked, believe that "general paresis is due to toxins, the result of auto-intoxication from previous infection of the system by syphilis or other poisons."

Among the advocates, which are many, of the view that the neurone suffers primarily may be prominently mentioned Nissl, Tuczek and F. W. Mott, the latter has recently in a number of papers supported this theory.[1] He believes it to be "like tabes a primary degeneration of the neurone, with meningo-encephalitis that is secondary." This is due, he thinks, to a premature failure of the specific vital energy of the neurone. In this view of the cause, he differs from some of the other advocates of this theory, who believe that the

[1] Archives of Neurology, 1889, Vol. 1, p. 7; *ibid.*, p. 166. Brit. Med. Jour., Nov. 25, 1899; *ibid.*, June 23, 1900. Trans. London Path. Soc., 1900, 11, p. 339.

degeneration of the neurone is due to the influence of a toxic principle of some sort. With such eminent advocates of both views it does not seem advisable in a work such as this to advance any dogmatic opinion. The references given will enable any who desire to study the matter for himself. It seems safe to say, however, that whether the primary seat of the lesion is in the blood-vessel or in the neurone, that the cause is a toxic principle, the nature of which is not understood, but is probably in most cases, at least, the outcome of a previous syphilitic infection. In this connection should be mentioned the recently expressed views of W. Ford Robertson and Lewis C. Bruce[1] that general paresis is due to a toxemia of gastro-intestinal origin, due to overgrowth of the bacteria that normally dwell in the alimentary tract, and that syphilis acts as a predisposing cause by altering the normal immunity. This, while not yet confirmed by others, is novel and interesting.

**The Viscera.**—In respect to the condition of the body and viscera of patients dying of general paresis it has been found by comparison that the pathological records of the Government Hospital for the Insane, Washington, D. C., and the State Hospital, Norristown, Pa., institutions where the writer formerly served, conform very closely to the published results of Mickle, derived from a large series of post-mortem examinations. Hence, as confirmatory of ample experience, an abstract of these results may be given:

**Body-nutrition.**—In about one half of the cases the nutrition of the body was fair or good; in nearly fifty per cent. there was some degree of emaciation, of

[1] British Medical Journal, June 29, 1901.

whom one half at least may be said to have shown extreme emaciation. Only a relatively insignificant number, less than three per cent., were very fat.

**Heart.**—Pericardial fluid was somewhat increased in one third of the cases. Blood: usually, the right chambers of the heart were full, the left ventricle nearly empty. The cardiac clots were softish, occasionally firm, rarely was the blood entirely fluid. The heart-muscle was more or less softened and unduly flabby, or friable in about two thirds of the cases. One or both of the valves of the left side of the heart were altered in at least two fifths; increased thickness, opacity, atheromatous and calcareous changes were by far the most frequent; but vegetations, cohesions, valvular obstruction or incompetency were occasionally seen. In two per cent. there was marked dilatation of the heart and in eight per cent. marked hypertrophy. In about half of the cases, one or both of the coronary arteries, especially the left, were found to be more or less atheromatous.

**Lungs.**—Old pleuritic adhesions or pleuritic thickenings were noted in two thirds; hypostatic congestion, or marked congestion and edema of bases, in more than two thirds; and some serous fluid in pleura in nearly half of the cases. In one third of the autopsies there was more or less pulmonary tuberculosis, occasionally there was ordinary caseous (catarrhal) phthisis. In one third, marked hypostatic pneumonia and in one fourth of the cases there was a form of lobular pneumonia; both, occasionally, were found with or passing into slight local gangrene.

**Liver.**—In about half of the cases there was marked passive congestion of the hepatic veins; and in one sixth of these the appearance was distinctly "nut-

meggy." The hepatic substance was unduly friable, or flabby in eleven per cent., merely too firm in six per cent. and in eleven per cent. it was slightly cirrhotic. In a small per cent. of the cases the liver-capsule was thickened and in about the same number there were old perihepatitic adhesions to neighboring parts.

**Spleen.** — In nearly one half, the spleen was decidedly too firm; in a small per cent. unduly soft. In a few cases its capsule was extremely pigmented and in an equal number the spleen was unusually notched.

**Kidneys.** — In nearly one half of the cases some marked morbific change in the kidneys was found. In eighteen per cent. the kidneys were noted as being markedly cirrhotic, or atrophied and granular; in thirty-four per cent. the capsules were adherent; and in twelve per cent. there was discovered the ordinary cystic change. The kidneys were found congested in eighteen per cent. In two to four per cent. the following conditions were recorded: Marked lobulation; extremely thickened capsules; fatty kidney; induration (independent of "granular" change); locally cicatrized surface; old perirenal adhesions; horseshoe kidney, and renal calculus.

# CHAPTER XVIII.

## TREATMENT.

1. **Prophylactic Treatment.** (*a*) *Hereditary Predisposition.*—Prophylactic treatment, without doubt, would be the most important division of treatment, if it could be made effective, because it reaches not one life alone but many. The first consideration, then, in the treatment of general paresis, is the eradication of any tendency towards hereditary predisposition.

While general paresis is not so largely a hereditary disease as some of the other forms of insanity, yet even here the fruits of a weakened nervous constitution tell on the next generation with no abatement of force. We find that in a large number of paretics the brain is defective from birth, so that while the parents for the most part have not been subjects of the disease, paresis in the offspring has resulted from a vitiated state of the brain, entailed by other neuropathic conditions in the parents.

Profiting by the general knowledge in the prevention of hereditary diseases, many of the ills of life could be escaped, if medical men in general practice, with courage equal to their convictions, would assert the dangers of the neuropathic predisposition. The physician is, and must be, the conservator of the public health and, looking to the welfare of posterity, he should use his influence to the utmost to root out any preventable tendency to weakness and disease in the race. Clearly it should be his duty to impress strongly on the minds of his patients the necessity of the avoidance of the marriage of neuropathic people.

With less forethought than the breeders of cattle, we never raise our voice against the "sowing of tares," in the pernicious habit of indiscriminate marriage of the "unfit."

Never has there been a time when the teachings of the medical profession have claimed more attention than to-day. This condition is largely due to an intelligent public, who by their wide general reading and consequent application of scientific truths, are ready to heed the warnings thus pointed out, which a generation or two ago would have fallen on deaf ears. This state of affairs is the good soil on which the family physician should not neglect to scatter his seed of good advice most faithfully. It is only by the development of a healthy public sentiment that such good can be accomplished, for laws will never be enforced unless in harmony with the ideas of the community. Hence legislative action should follow, not precede, public sentiment. Later, cautious legislation can crystallize the sentiments developed in a community by the concerted action of thousands of physicians.

(*b*) *Individual Predisposition.*—A more active field promising more immediate results, is the removal of individual predisposition.

The children already endangered by a vicious heredity should be given, so far as possible, a balance against the onset of disease. The earlier this is established the better; herein lies one of the opportunities of the physician. He may do much towards securing for the individual a healthy body, if he insists that self-control, freedom from excitement and over-tire be maintained; that a healthful moral and intellectual training shall be given; and that well-balanced mental powers be developed with broad-minded judicious habits of considering religious,

social, and intellectual subjects. The energies should be directed into proper channels and later the lesson be taught that strain of worry or excess of any kind is poison to mind and body. In many cases should be emphasized the dangers from the over-strain and over-living of the twentieth century civilization, resulting not only in paresis, but in the many forms of neuropathic heritage. Thus the physician should enlighten and warn; and by every prophylactic means in his power strive to ward off the encroachment of this dire scourge of modern times.

(*c*) *The Threatened Attack.*—A still broader field of prophylactic treatment is the actual prevention of an impending attack of general paresis by removing the patient from the circumstances or environment under which premonitory symptoms have been observed and regulating the life so that such an attack is lessened or removed. This means the regulating of every movement of the patient, the removal of all strain or excess, the use of regular bodily exercise, early hours for retiring, massage and bathing, the gentle use of the intellectual and moral faculties, the avoidance of wines, tobacco and coition. It is absolutely essential to cut the patient off from severe work and anxiety and yet judgment must be used. It may require a determined effort on the part of the physician but he should not be disheartened or rebuffed by the patient's environment but gently and firmly force him into other life. It is not necessary to do this hurriedly or ill-advisedly but by degrees the patient can be made to do things that might be deemed absurd or impossible if forced upon him in an injudicious manner.

2. **Treatment of the Established Disease.**—The very early stage of the disease is the one that presents op-

portunities most favorable for treatment, and the only period in which hope of permanent relief can be as yet entertained. The care of general paresis, naturally, divides itself into the hygienic management of the case, as separate from the strictly medical treatment.

As the former life of the paretic is, in a large degree, responsible for his breakdown, the causes that have brought on him his misfortune must be closely studied and the axe laid at the root of the tree. By attention to healthful means the general tone of the system can be built up, and by a judicious regulation of the habits and life of the patient much can be done, at this time, to check the impending tendencies of the malady. The stress of the environment, or of business strain, if ever relieved to the benefit of the patient, can best be accomplished at this period, if the friends are tactful in their influence. In some cases the patient may even be informed of the gravity of the results, if he persists in his course of worry or excess, and if he be at all in a condition to be swayed by wise motives, he may be brought to a realizing sense of the folly of his ways.

If at this stage, freedom from mental anxiety, change of scene, and a personal interest in other less absorbing surroundings, can be secured, together with hygienic conditions of living, there is fair prospect that healthy cerebral activity may be restored and sufficient force acquired to thwart the advance of the morbific processes. One author says: "More or less complete arrest of the disease may be favored by the recognition of its early stage, and by treatment which practically amounts to putting the brain in a splint, as it were." Voisin in France and Meynert, among the Germans, have expressed a confident belief that paresis is susceptible of cure in its early stage. Mey-

nert based his belief on the theory that preceding and causing the diffuse cortical encephalitis, there is a functional vaso-motor disorder, which he considered curable.

The means here to be pursued are much the same as those which are employed as prophylactic measures. It implies a careful oversight and control of the details of the patient's living; work, both mental and physical, reduced; the removal of all stress and strain; abstemious habits of living, such as the avoidance of wines, tobacco and coition; the use of mild bodily exercise, early hours and watchful care of sleep; a suitable diet and very careful attention to the state of the bowels; the application of massage and a systematic course of hydrotherapy, combined with the partial "rest cure." In certain cases electricity in some of its forms will be found of advantage. The physician must not yield to any discouraging exigencies in the patient's surroundings, but gently and firmly, by the influences at his command, direct the life of the patient into more wholesome channels.

If there is impaired health the bodily functions should receive attention, the general condition built up, with tonics if necessary, and such plan of treatment instituted for this end, as best meets the views of the individual practitioner. But rest, fresh air, wholesome food, moderate exercise and regular hours will be found to be, as ever, the greatest restorers of energy.

Even in suspected cases, where the diagnosis has not been fully made out, it is well to advise rest; and in most cases removal from the daily occupation and surroundings. At this time the question of travel will force itself on the attention of the physician. The word "travel" is attractive to the mind of the overworked practitioner and patient; in truth, it has a

sweet sound to most ears. But it is now generally recognized that travelling of any kind is conducive to more harm than good to a paretic patient, attended with its hurry, annoyance and excitement. There can be no doubt that a change of environment will always be of benefit; but the special form of the change must be left to the discretion of the advisors, in each individual case, which must be decided in accordance with the circumstances. Danger from suicide, or assault, may have to be guarded against, and the very prevalent risk of dissipation of property should be ever kept in view. If the removal from home, in the early stage, should involve the loss of income, or be a serious interference in business, so that the anxiety resulting would be of greater injury to the patient, then a lightening of labor alone may be insisted on, together with the adjustment of the home life.

The subject of food needs further elucidation. In the first stage, when there is much excitement, the diet should be light and easily digestible, and absolutely prohibitory of alcohol in any form. It will be difficult to insure temperate eating and drinking, for the appetite, always large, is frequently so voracious that nothing short of over-repletion will satisfy the patient's desire. In the later stages the nourishment should be more generous. Milk and eggs may be placed at the head of the list. These articles of diet can be prepared in many ways, so as to prove tempting dainties to the sick. Vegetables, celery, asparagus tops, and fruit should be freely allowed. Meats on the other hand should be restricted. Owing to paresis of the muscles of deglutition much care must be exercised that the patient does not choke, or that food is not introduced into the trachea. By easy gradations the food administered must pass from solid

to minced and from that to liquid form, in the last months of his life. Alcohol, which at first is withheld, may be given with benefit in the third, or last, stage.

As stated under etiology, there is at present a strong trend in the belief among psychiatrists towards the theory that general paresis is an affection due to chronic toxemia. There are indications also that the poison is of bacterial origin through the digestive system. These observers uniformly teach, whether they believe the primary process to be nervous or vascular, that the natural immunity of the gastro-intestinal tract is modified by the breaking down of those forces which control normal metabolism. The light that recent physiological chemistry and bacteriology has brought to the solution of this problem may soon mark the pathway to remedial measures, such as specific serums or other antitoxins, that will neutralize the influence of these poisons which gain access to the circulation. If this hypothesis should be confirmed it is not improbable that this malady, thus far fatal, may be transferred in a few years to the list of curable diseases.

**General Medical Treatment.**—As yet there is no specific drug or class of drugs which can be regarded as at all remedial in character. This should not be a cause for discouragement, however, for much may be done to alleviate the various conditions and to retard the progress of the disease. It is necessary to bear in mind always that the most unaccountable remissions may appear from time to time, even in the final stages, so that the physician's efforts should not be relaxed, or his prognosis, as to the immediate results, be too gloomy. The plan of treatment suggested in the prodromic period should be continued and it is

well to remember that in an affection which promises so little from the use of drugs the hygienic and mental management of the case, together with efficient nursing, hold the chief place in the treatment.

In making a review of the therapeutic history of general paresis, one becomes clearly convinced of what a mighty struggle there has been waged against this formidable disease. It would seem that there is scarcely any drug or remedial measure, at all applicable, that has not been brought to bear against it. Counter-irritation, derivation, revulsion by blisters, suppurants, cauteries, or setons to the neck, spine or scalp; venesection[1] and leeching; and repeated paintings with iodin have been faithfully applied but should be rejected as too severe and of doubtful utility. Veratrum viride, tartar emetic and diuretics; nitrate of silver, zinc, physostigma, papaverine and apomorphia, have had their adherents in the past, but are seldom resorted to at the present day. We mention them in order to call attention to the fact that, now and then, some good has resulted from the use of them.

*Tonics.*—In many cases, in the early stages that are free from excitement, there are indications for the use of tonics, and most cases call for this plan some time during the course of the disease, especially if the patient be enfeebled, emaciated, exhausted or phthisical. They should not be given indiscriminately, much skill can be displayed in the choice of them, which must be left in great measure to the judgment of the attending physician. Among the most prominent may be mentioned the preparations of iron, the vegetable tonics, cod-liver oil, the hy-

[1] A man who had decided to commit suicide by letting his blood, felt so much better after considerable blood had escaped, that he had the wound bound up again. Also a gentleman greatly depressed in mind who was being bled; as the blood flowed, he gradually changed and finally began to joke, etc. (Abstract, Sankey, *op. cit.*, p. 311.)

pophosphites, quinine, strychnia, arsenic and phosphorus. The number of elegant pharmaceutical formulas containing these in various combinations in the market is legion.

*Sedatives.*—There is a long list of drugs of this class, which would carry us into too great prolixity to discuss separately. The selection or combination used is susceptible of a widely varying discriminating choice. The chief ones are: Opium, morphine, bromides, chloral, cannabis indica, veratrine, hyoscyamin, hyoscine, duboisin, sulphonal, trional, hypnal, tetranal, paraldehyde, chloralamide, antipyrin and chloretone.

*Ergot, Ergotin.*—Ergot or ergotin has enjoyed some reputation, when administered continually for a long time, in moderate doses, in relieving the cerebral congestion, underlying excitement, and in warding off congestive seizures, but its value has not been uniformly apparent and it has fallen into general disuse.

*Digitalis, Digitalin.*—Digitalis has been employed by French and English physicians, to combat maniacal excitement, and the tendency to cerebral congestion, with fairly good results, but there are drawbacks and dangers to its use that seem to check enthusiasm.

*Antisyphilitic Remedies.*—The observations of Collins,[1] under antisyphilitic treatment in tabes, equally apply to the advisability of antisyphilitic treatment in paresis. When syphilis is the causative factor neuro-alienists are not agreed as to the importance of specific treatment. Some, following Charcot, steadfastly hold that such treatment is useless, no matter how indifferently the patient may have been treated during the active period of the syphilitic poi-

[1] Treatment of Nervous Diseases, p. 233.

son, providing that the symptom-complex of paresis did not develop within a short time after the syphilitic infection, from two to four years, when the lesion may be properly considered a true syphilitic and not a parasyphilitic one.

On the contrary, others, following Erb, recommend an active course of antisyphilitic medication in every case of paresis with a history of syphilis, or even upon the suspicion of a taint, or where this method will speedily clear up any confusion with cerebral syphilis. Berkley[1] inaugurates, at once, inunctions of blue ointment, or oleate of mercury, or the hypodermic administration of the bichloride, or the sozoiodolate of mercury in salt solution. While his preference is for the mercurial salts, he uses, also, the iodide of potassium in doses gradually increasing to sixty grains or upwards, thrice daily. In these cases, Osler[2] prescribes large doses of the iodide of potassium. Collins believes that the best results can be obtained by the use of mercury by inunction; if this method cannot be carried out then its use hypodermatically. Mercury, as specific means, he believes should be given in no half-hearted way. He is accustomed to use from thirty to forty grains of blue ointment rubbed in daily, each application lasting from twenty to thirty minutes and the course continued from five to six weeks. He cautions watchfulness over the condition of the patient's alimentary tract, skin and body weight. Too much care cannot be taken to keep him clean, much in the open air and well fed. Great importance is attached to the maintenance of the body weight; if this cannot be done the mercury should be stopped at once. After the mercury treatment has been suspended, the patient should receive a vigorous tonic plan of treatment for several months.

[1] Mental Diseases, p. 195.
[2] Practice of Medicine, 3d ed., p. 964.

The author agrees with Collins that nothing is to be expected from the administration of mercury, be it by the mouth, inunctions, or hypodermatically, in cases of genuine paresis in which no syphilitic manifestations are present but that harm even may arise from such a course. On the other hand, iodide of potassium, given in small doses and for a long time, especially in conjunction with measures that improve the nutrition and husband the energy, is one of the most valuable drugs to delay the decay of the primary neuron.

*Electricity.*—Either static, constant or induced, in the hand of some practitioners, who are skilled in its application, is highly extolled, especially in the prodromal stage. Combined as it is apt to be with massage and other devises employed in asthenic nervous conditions it has often been attended with good results. The head and spine are the regions to be treated.

*Hydrotherapy.*—Douches, the warm bath with cold to the head, wet pack and other forms of application of water cure have been very useful in the hands of many in the treatment of the initial period; and, also, in the later stages this form of treatment has at times brought about marked amelioration of the symptoms. In the Government Hospital[1] at Washington, as an instance, this plan of treatment was instituted a few years ago and the physicians speak most enthusiastically of the results. For details in the application of electricity, hydrotherapy, massage and rest treatment the student is referred to the well-known works on nervous diseases.

*Trephining.*—Although of occasional value, surgical measures have proved unsatisfactory. Trephining has been practiced chiefly, over the parietal region,

[1] Forty-first Annual Report, p. 160.

both in this country and abroad. The operation was originally proposed on the supposition that in paresis there was present an increased intracranial pressure.

**Treatment of Special Symptoms.**—In the treatment of the special symptoms the same general principles must be adopted that are found to be efficacious in the relief of the same symptoms, in other forms of mental disease.

*Mental Excitement.* — Sankey recommends the combination of digitalis and opium, as advised by M. Dumesnil. He gives it in the proportion of one drachm of the tincture of opium (Br.) to ten minims of the tincture of digitalis, every four hours, until the patient becomes more tranquil or sleeps. Peterson resorts to hyosein, hyoscyamin, or duboisin (gr. $\frac{1}{100}$ to gr. $\frac{1}{10}$), hypodermically, in periods of maniacal excitement. Dercum speaks highly of antipyrine (gr. x to gr. xx), every four hours. The bromides, chloral, sulphonal and trional, by others, are given separately or combined, and paraldehyde for the same purpose, to induce quiet and sleep. The use of the hot bath, with cold to the head, followed by isolation, are good tranquilizing agents, as well as the wet pack.

*Insomnia.* — In the earlier stages of paresis, the patient often suffers acutely from sleeplessness, which serves to aggravate the other nervous symptoms. The remedies suggested in the period of mental excitement may all be of service in insomnia. Paraldehyde, in doses of twenty to thirty minims, may be given at bed time, or double this amount suspended in thin mucilage, administered by the bowel. As Stearns has said, there is less objection by parties to this drug, on account of taste, than by other classes of invalids. Some alienists keep to the use of chloral

in preference to the newer remedies. A combination of equal parts of trional and sulphonal answers well as a hypnotic in many instances. The rapidly induced effects of the former are supplemented by the less transient action of the latter drug. These two last-named drugs are not very poisonous in single overdose, but there is a variety of chronic poisoning by them that may be even more serious, brought about by too long duration of their use. The symptoms are an obstinate constipation, diminished quantity of urine and hematoporphyrinuria. If treatment be prolonged, one should be on his guard for the toxic symptoms. Constipation of marked obstinacy with scanty dark red urine, should at once excite suspicion.

Chloretone has not passed the stage of experimentation, but already its unfavorable record as a depressant of the heart raises a danger signal to its promiscuous use.

*Epileptiform Seizures.*—Many agencies have been suggested for the relief of these attacks. Setons and vesicants to the nape of the neck, painting the neck with iodine, and trephining have accomplished but little. The continuous use of the bromides for long periods of time is, perhaps, the best treatment to ward off threatened attacks, giving attention, in the meantime, to the general condition of the patient. In status epilepticus, rectal injections of chloral in starch water are recommended. The seizures may be so marked as to require the inhalation of chloroform. The bowels and bladder should be evacuated, the lower bowel by enemata. A drop of croton oil on the tongue, if other purgatives cannot be given, may relieve the cerebral congestion by purgation.

*Apoplectiform Seizures.*—In this condition the requirements are, the elevation of the head, the use of free purgation, the application of cold to the

head, with or without a prolonged warm bath. The alkaline bromides and ergot are recommended in full doses. In suitable cases, when the cerebral congestion is marked, leeching, blood-letting by venesection or cup, calomel, digitalis, camphor enemata have all been used. Hot mustard foot baths seem frequently to arrest an attack.

*Bed-sores.*—In the last stages of paresis much care must be taken to prevent the forming of bed-sores. Perfect cleanliness should be enforced; the use of a water bed, with frequent changes of position, and with buffers of some soft antiseptic material over the bony protuberances, is indicated. The skin may be hardened by white of egg and spirits, or by a strong solution of tannin, or a strong solution of sulphate of zinc. If sores form, despite every precaution, they should be carefully treated and watched. Many of these sores are really trophic in character and not due to pressure at all. This is shown by the fact that they appear at points where no pressure has been exerted.

Hughes recommends a novel plan of treatment. He orders the sore washed with warm water and castile soap, and then thoroughly rinsed. A liquid preparation of beef bovinine is poured over the surface of the ulcer and the surface is saturated by using pledgets of lint. The ulcer is carefully covered, as in a surgical dressing. Granulations appear gradually after this treatment, followed by an epithelial covering. This treatment is effective, for the tissue thus formed is not less resistant than the neighboring skin.

*Terminal Symptoms.*—Life in the open air is advisable, as long as it can be continued; as soon as the patient is not able to walk alone he should be given assistance; when this assistance no longer avails, a reclining chair should be used, and thence by stages,

he must go to the constant use of an air or water bed.

At this period an abundant and nourishing diet should be used, but it must be administered with care; the paretic is apt to bolt his food and hence is frequently in danger of choking. There is danger, too, of the inhalation of food and of resulting lobular pneumonia. In cases of dysphagia it may be necessary to use the nasal tube in giving food; in these, and in very demented patients, it is sometimes imperative, for brief periods, to administer peptonized food by the rectum.

Perfect hygiene is of the utmost importance. Regular bathing must be continued and a constant vigilance for bed-sores be maintained. At this stage when the sphincters are paralyzed, or at best react sluggishly, cleanliness is difficult to secure but is absolutely necessary. Excreta should be removed promptly and every precaution taken to keep the skin free from irritation. The bowels must be kept open and often comparative regularity of action can be secured by using, at stated times, a simple enema. Gentle massage also may be used to secure regularity of the bowels.

In cases of diarrhea, often troublesome in the last stages of paresis, the matter of cleanliness becomes a great tax, but it must be maintained with most assiduous care, and the diarrhea must be given the usual treatment.

Catheterization should be avoided, as long as it is possible to produce urination by other means. The patient must be encouraged to evacuate his bladder by his own efforts, and to complete the evacuation, gentle[1] manual pressure may be used; unless this is done the decomposition of the residual urine quickly sets up cystitis.

[1] Be sure the pressure is gentle, for too great force may result in rupture of the bladder.

By such constant and faithful care, the life of the patient may continue for months, in a weak and bed-ridden, but still comparatively painless condition.

# INDEX.


ABSCESS, 66, 150, 233, 235
  Acute mania with delusions, 178
Agapoff, 256
Age of occurrence, 204
Amenorrhea, 33
Amnesia, 27–29, 30, 35, 110
Analgesia of ulnar nerve, 146
Anesthesia, local, 33, 62
Angiolella, 214, 263, 283
Anglade, 193
Anglo-Saxons, paresis in, 210
Anxiety as a cause, 221
Antisyphilitic remedies, 275
Aphasia, 117, 118
Aphonia, 119, 132, 146
Apoplectiform seizures, treatment of, 279
  attacks, 34, 58, 129
Apoplexy, 177
Appetite, voracious, 55
Argyll-Robertson pupil, 93, 125, 139, 148
Arson, act of, 111
Arthropathy of knee joints, 151
Articulation, impaired, 33, 45, 56, 65, 117
Atrophy, optic, 26, 96, 139, 140, 141, 195
  prog. muscular, 150
Auto-intoxication, 214, 263, 273

BAILLARGER, 20, 75, 76
  Baker, J., 111
Bacterial infection, 214, 263, 273
Ball, 21
Ballet, 32, 259
Bannister, 193, 204
Bayle, 19, 41
Bed-sores, 65, 72, 100, 150, 157, 241
  treatment of, 280
Bell, Luther, 21
Berkley, 35, 62, 80, 111, 112, 188, 193, 248, 261
Bettencourt-Rodrigues, 124
Bianchi, 124
Bigamy, 40
Bladder, rupture, 281
  trouble in paresis, 169
Blandford, 35, 77, 82, 88, 181, 233, 237, 239, 240
Blood changes in, 151, 164
  sweating, 147
  -vessels of brain, pathology of, 252
Body nutrition, 264
Bones, 158, 160
Bonnet, 193
Brain, pathology of, 246
  macroscopic, 246
  microscopic, 251
  in acute cases, 247
  in chronic cases, 248
Briscoe, 239
Bronchitis, 86
Brush, 238
Bucknill, 50, 57
Bucknill & Tuke, 50, 215, 217, 232, 233
Burr, C. B., 158, 160, 236

CALMEIL, 19, 22, 75
  Campbell, Alfred, 260
  Clark, 34, 38, 43, 72, 78, 85, 92, 96, 115, 132, 135, 198
Catheterization, 281
Carbuncles, 233
Causes, 17, 187 (see Etiology)
Cephalalgia, 175
Cerebellum, pathology of, 249
Cerebral seizures, 58, 64, 127, 129, 171
Chapin, 187
Character, change of, 28, 31, 34
Charcot, 93, 105, 192, 275
Children of paretics, 189
Christian, 128, 218
Chorea and paresis, 228
Chronic alcoholic insanity, 173

Circular form, 82
typical cases of (Blandford), 82
(Campbell-Clark), 84
(Magnan), 83
(Savage), 83
Classes, higher and lower, 211
Classification of varieties, 73
Climacteric, influence of, 106
Clouston, 24, 47, 53, 61, 67, 85, 86, 90, 95, 97, 124, 134, 136, 140, 146, 147, 158, 161, 189, 218, 224. 237, 248
Collins, 275
Commencement, mode of, 22
Congestion of optic discs, 142
Congestive attacks, 58, 67
Conjugal general paresis, 107
Contractures, 26, 65, 69, 72, 100, 102, 107, 139, 197, 214
Cortex, pathology of, 248
Cranium, pathology of, 246
Curability, probable future, 273
Cystitis, chronic, 167

DAWSON, 142, 148
Deafness, 143, 146, 217
Decortication, 247, 250
Defects of speech, 33, 45, 57, 65, 117
Definition of paresis, 22
Deglutition, impaired, 66, 67, 90
Delaye, 17, 19
Delusions of grandeur, 25, 38, 41, 47, 49, 50, 59, 62, 68, 70, 71, 207, 227
of persecution, 83, 142
Dementia, simple progressive, 94
Dercum. 60, 194, 213, 215, 237, 259
Developmental paresis, 93, 97–106
De Boismont, 30
Diet, 272
Deiters' cells, 253
Differential diagnosis, 172
acute mania with delusions, 178
apoplexy, 177
chronic alcoholic insanity, 173
disseminated sclerosis, 180
epilepsy, 177
lead poison, 180
paralysis agitans, 181
paralytic insanity, 175
senile insanity, 179
syphilitic insanity, 174
Diagnosis, tabes dorsalis, 180
typical cases of diagnosis (Blandford), 181
(Folsom), 182, 185
(Tomlinson), 183
Digestive disorders, 33
Discovery, date of, 18
Disseminated sclerosis, 180
Double form, 82
Doutrebente, 188
Down, 91
Dual theory of paresis, 17, 20
Dunn, E. L., 102
Dura, pathology of, 246
Duration, 236
typical cases (Brush and Sinkler), 238
(Blandford), 239
(Briscoe), 239
(Fisher, E. D.), 237
(Journal of Mental Science), 239
(Lapointe), 238
Dysmenorrhea, 33

EARLY life, paresis in, 93, 97–106
Edema of lungs, 241
Electricity, 277
Emaciation, 64, 66, 70, 72, 100, 265
Embolism, 242
Epilepsy, 177, 218
Epileptiform attacks, 34, 40, 58, 62, 70, 72, 83, 90, 95, 133, 196, 200
treatment of, 279
Erb, 276
Erysipelas, 233, 242
Esquirol, 19
Etiology, 187
age, 204
typical cases (Savage), 206
(Tomlinson), 206
epilepsy, 218
typical cases of (Christian), 218
(Sankey), 219
(Workman), 218
excesses, 212
heredity, 187
typical cases of (Charcot), 191
(Clouston & Savage), 189
(Grannelli), 193
(Hotchkis), 190

Etiology, heredity, typical cases of (Mott), 191
(Muller), 192
(Revue de Psychologie), 190
(Wilson, G. R.), 189, 190
injury to the head, 214
theory of Dercum, 215
typical cases of (Bucknill & Tuke), 215, 217
(Clouston), 217
(Mickle), 216
(Neff), 216
(Rayner), 215
(Sankey), 216
intellectual overwork, 221
typical cases of (Sankey), 222, 223
(Savage), 221
physical overwork and strain, 220
race and social influences, 209
table by Spitzka, 210
typical case (Workman), 212
sex, 201
ratio of liability, 201
table by Regis, 201
typical cases (Bannister), 204
(Marr), 204
(Middlemass), 202
(Sankey), 203
syphilis, 193
statistics, by Bannister, 193
by Berkley, 193
by Graf, 193
by Houghberg, 193
by Kraepelin, 193
by Lewis, 193
by Mendel, 193
by Peterson, 193
typical cases of (Campbell Clark), 198
(Folsom), 198
(Norman), 195, 199
(Savage), 195, 197
(Von Rad), 197
temperament, 200
typical case (Savage), 102
toxic agents, 214
theory of Angiolella, 214
typical cases (Stearns), 213
(Wiglesworth), 214
Exaltation, 30, 31, 35, 42, 50, 52, 53, 62
Exhaustion, 64
Exposure to cold causing paresis, 220
Excesses, 212
Eye symptoms, 137

FACIAL expression, 46, 57, 60, 96, 116, 200
Farrar, Reginald, 17
Fatigue, early, 34
Finnegan, 142
First stage (second period), 41
mental symptoms of, 41
hypochondriacal, 43
maniacal excitement, 43
melancholia, 43
physical symptoms of, 44
defects of speech, 45
facial expression, 46
pupillary anomalies, 45
tremor, 45, 46
typical cases of (Bucknill and Tuke), 50
(Clouston), 47, 53
(Fox), 48
(Hammond), 50, 54
(Sankey), 49
Fisher, E. D., 37, 96, 238
Flechsig, 259
Food, 272, 281
Folsom, 34, 36, 37, 40, 73, 79, 108, 109, 182, 183, 185, 188, 198
Fournier, 194
Foville, 162
Fox, 48, 155
Fracture of bones, 159, 160
Froelich, 161

GAIT, 40, 46, 48, 58, 61, 65, 66, 81, 103, 120, 127, 143
Galloping form, 80
Gangrene of lip, 155
Gastric crisis, 33, 85
Geil, 259
General paresis following ordinary insanity, 79, 224
following paranoia, 79
Georget, 19
Germans, paresis in, 210
Giannone, 146
Grannelli, 193
Gray matter, pathology of, 249
Griesinger, 34

Guislain, 214
Gun, firing of, exciting cause, 217

HALLUCINATIONS, 72, 85, 90, 114, 131, 217
Hair, 150
Hammond, 29, 40, 50, 54, 63
Handwriting, 119
Haslam, 18
Headache, 33, 34, 128
Hebrews, paresis in, 210
Heart, pathology of, 265
Hematoma auris, 161, 195
Hemiplegia, 38, 72, 95, 133, 209
Heredity, 82, 106, 187, 267
Higher and lower classes, 211
Hirschl, 205
History of paresis, 18
Hoch, Aug., 104
Hoche, 259
Hoestermann, 79
Homicidal impulse, 43, 61, 198, 208
Hotchkis, 190
Houghberg, 194
Hughes, D. E., 79, 280
Hurd, H. M., 33, 233
Hydrotherapy, 271, 277
Hypochondria, 43, 61
Hypothetical case in prodromal stage (Sankey), 24
Hysteroid attacks, 129

INJURY to the head, 214
"Insane ear," 161
Incontinence of urine, 169
Insomnia, 32, 47, 90, 145
treatment of, 278
Intellectual overwork, 221
Irish, paresis in, 210
Irritability, a symptom, 30, 34, 37–39, 43, 61

JELLIFFE, 81
Joffray, 93, 190, 259
Joy, excessive, a cause, 222
Juvenile paresis, 93, 97–106
in sisters, 97, 102

KATATONIC symptoms, 128, 217
Kidneys, pathology of, 266
Kiernan, 214
Klippel & Servaux, 170
Knapp, 141
Knee-jerk, relative frequency, 125
Kraepelin, 193
Krafft-Ebing, 22, 188

LANGDON, 166
Lapointe, 238
Lateral columns, implication of, 89
Lead poison, 180
"Leather-coated jack," 159
Lemoine, 188
Lewin, 193
Lewis, Bevan, 27, 29, 30, 31, 74, 88, 122, 127, 133, 135, 137, 164, 251, 253, 255, 258, 261
Liver, pathology of, 265
Lloyd, J. H., 153
Locomotor ataxia, 90, 91
Lungs, pathology of, 265
Lunier, 20, 76, 188

MABILLE, 162
Macleod, 165
Macpherson, 64, 146, 151
Magnan, 84, 190
Malaria, paresis mistaken for, 109
Maniacal excitement, 43, 48, 278
Manner of development, 18
Marr, 204
Marie, 228
Marinesco, 256
Massage, 271
Masturbation, 114
Medico-legal aspect, 30, 44
Medulla, pathology of, 249
Meeson, 170
Melancholic form, 85
Medical treatment, 273
Mendel, 193, 218
Menses, alteration in, 106
Mental excitement, treatment of, 278
shock, 221
symptoms of general paresis, 41
symptoms of prodromal stage, 27
of first stage, 41
second stage, 55
of third stage, 64
Meynert, 78, 270
Mickle, 24, 77, 114, 125, 146, 165, 193, 205, 211, 213, 215, 216, 221, 224, 248, 249, 251
Middlemass, 106, 109, 203, 225
Mills, 89, 259
Migraine, 146

Mode of commencement, 22
Moral perversion, 28, 40, 71, 110
Morselli, 22
Mortimer, 231
Mott, 191, 259, 263
Muller, 192
Muscular atrophy, 150
incoördination, 65

NÄCHE, 188
Nageotte, 259
Nails, 150
Neff, 216
Negro, 209, 210, 212
Nerve cell, pathology of, 255
Nerves, peripheral, pathology of, 260
Neuritis, optic, 33, 140
peripheral, 69
Neuroglia, pathology of, 253
Newcombe, 133
Nightmare, early symptom, 145
Nissl, 263
Norman, 98, 197, 200

OPISTHOTONOS, 129
Optic neuritis, 33, 140
Organic dementia, 175
Osler, 276

PAINS, 32, 61, 72, 145
Paralysis agitans, 181
Paralytic insanity, 175
Parchappe, 20, 75
Paresis in brothers, 201
in daughter, tabes in mother, 192
in mother and child, 191, 192
ratio to other insanities, 201, 211
vs. syph. brain dis., 174, 193
Paresis without insanity, 21
Paresthesia, 33
Parsons, 168
Particular symptomatology, 110
apoplectiform attacks, 129
typical cases of (Campbell Clark), 132
(Tomlinson), 129
bladder, 169
bones, 158
typical cases (Burr, C. B.), 159, 160
(Froelich), 160
classification by Lewis, 127
epileptiform attacks. 133
Particular symptomatology, epileptiform attacks, typical cases of (Campbell Clark) 135
(Clouston), 134, 135
(Lewis), 134
(Spitzka), 134
eye symptoms, 137, typical cases (Clouston), 140
(Dawson & Rambaut), 142
(Finegan), 142
(Knapp), 140
(Savage), 142, 143
(Stearns), 143
(Wiglesworth), 141
facial expression, 116
gait, 120
hallucinations, 114
handwriting, 119
headache, 146
hematoma auris, 161
moral perversion, 110
typical cases of (Baker, J.), 111
(Berkley), 111, 112
(Simon), 113
(Spitzka), 112
(Stearns), 111
vertigo, 122
pains, 145
pulse, 168
reflex action and reflexes, 123
crossed reflexes, 126
pupillary reflexes, 125
typical case (Clouston), 124
sensory disturbances, 146
typical cases of (American Journal of Insanity), 147
(Dawson & Rambaut), 148
(Spitzka), 147
(Stearns), 147
(Sullivan), 148
sexual instinct, 113
typical cases of (Stearns), 113
sleep, 145
speech, 117
aphasia, 118
typical cases of (Rosenthal), 118

Particular symptomatology, speech, typical cases of (Savage), 119
syncopal attacks, 127
typical cases of (Naecke), 128
(Christian), 128
(Stearns), 128
temperature, 164
typical case (Parsons), 167
tremor, 123
trophic changes, 149
typical cases of (Abstract, Arch. de Neurol.), 155
(Burr, C. B.), 155
(Fox), 153
(Lloyd, J. H.), 151
unilateral twitching, 136
typical cases of (Lewis), 137
(Turner), 136
urine, 169
Pathogenesis of paresis, 194, 214, 263, 273
Pathology, 246–266
body nutrition, 264
heart, 265
kidneys, 266
liver, 265
lungs, 265
spleen, 266
viscera, 264
macroscopic, of brain, 246
of cerebellum, 249
of cortex, 248
of cranium, 246
of dura, 246
of gray matter, 249
of medulla, 249
of pons, 249
of spinal cord, 250
of white matter, 249
microscopic, of brain, 251–257
of blood-vessels, 252
of nerve-cell, 255
of neuroglia, 253
Perfect, 18
Peripheral nerves, pathology of, 260
Personality, changed, 131
Peterson, 166, 193
"Petrified face," 116
Phelps, 107, 227
Phlegmon, 242
Physical overwork and strain, 220
symptoms of general paresis of prodromal stage, 32
of first stage, 44
of second stage, 56
of third stage, 64
Pick, 69
Pickett, 125
Pierret, 188
Pleurothotonos, 129
Pneumonic hypostasis, 129
Pons, pathology of, 249
Posterior sclerosis, 89, 90
Posture, changes in, 57
Precocious paresis, 93, 97–106
Prodromal stage, 27
mental symptoms, 27
insomnia, 32
moral perversion, 40
physical symptoms, 32
amenorrhea, 33
anesthesia, 33
depression, 38
digestive disorders, 33
dysmenorrhea, 33
grandiose delusions, 38
irritability, 38, 39
motor troubles, 33, 37, 39
paresthesia, 33
hypothetical case in prodromal stage (Sankey), 24
typical case in (Blandford), 35
(Campbell Clark), 38, 40
(Fisher), 37
(Folsom), 37, 40
(Hammond), 40
(Savage), 38
(Sinkler), 39
(Spitzka), 39
Prognosis, 239
supposed recoveries (Savage), 240, 241
(Spitzka), 241
Prophylactic treatment, 267
Pulse, 168
Pupillary anomalies, 14, 37, 45, 48, 57, 81, 125, 138

RACE and social influences, 209
Rambaut, 142, 148
Raymond, 100, 259

Rayner, 215, 231
Recovery, supposed, 240, 241
Reflex action and reflexes, 123
iridoplegia, 138
Reflex-excit. excess., case of, 124
Reflexes, abolition of, 65
crossed, 126
superficial, 124
Regis, 21, 188, 201, 211
Reguin, 120
Respiration in sleep, 145
Retention of urine, 169
Rest cure, 271
Remissions, 228
following abscesses, 235
typical cases of (Burr), 235
(Savage), 233
following carbuncles, typical cases of (Stearns), 233
slough (White), 233, 234
typical cases of remission (Blanford), 233
(Bucknill and Tuke), 231, 232
(Mortimer), 231
(Rayner), 231
(Spitzka), 232
(Stearns), 231
(Whitcombe), 230, 232
Ribs, fracture, 158
Robertson, W. Ford, 255, 256, 262

SACRAL decubitus, 65, 72, 150, 280
Sankey, 24, 49, 69, 72, 75, 100, 116, 159, 201, 204, 216, 222, 223, 244
Savage, 18, 21, 26, 27, 34, 38, 70, 81, 83, 87, 90, 93, 97, 107, 119, 143, 168, 195, 197, 201, 206, 213, 220, 222, 226, 234, 240, 241, 242, 245
"Scavenger cells," 255
Schules, 241
Sclerosis of spinal cord, 251
Second stage (third period), 55
illustrative case in (Berkley), 62
(Clouston), 11
(Dercum), 59
(Hammond), 62
mental symptoms, 55
physical symptoms, 56
apoplectic attacks, 58
congestive attacks, 58
Second stage, physical symptoms, epileptic attacks, 58
impaired articulation, 56
posture, changes of, 57
pupils, changes in, 57
skin, changes in, 57
tremulousness, 58
Sedatives, 275
Selmi, 170
Senile insanity, 179
paresis, 109, 206
Sensory disturbances, 146
Septic infection, 241
Sex, 201
Sexual ability lost, 114, 135
instinct, 113
Shafer, 256
Shaw, 76, 146
Simon, 113, 240
Sinkler, 39, 238
Skin, changes in, 33, 46, 57
Slave, formerly, develops p., 212
Sleep, 32, 145, 278
Sodomy, 190
Spasm, facial, on protrusion of tongue, 137
Special symptoms, treatment of, 278
Speech, 33, 45, 56, 65, 117
Spinal cord, pathology of, 250, 258
sclerosis of, 251
general paresis, 88
symptoms in women, 106
Spitzka, 28, 30, 39, 44, 73, 87, 113, 114, 115, 134, 147, 168, 172, 210, 232, 239, 241
Spleen, pathology of, 266
Stages of paresis, 23
(Mickle), 24
(Clouston), 24
Stearns, 32, 66, 86, 91, 95, 111, 112, 113, 122, 128, 144, 148, 213, 231, 233
Sterility, 189
Strabismus, 142
Suicide, 212, 242, 272, 274
Sullivan, W. C., 149
Sunstroke, exciting cause, 215
Suppuration, 240, 241
Symptomatology, 110
Symptoms, terminal, treatment of, 280
Syncopal attacks, 127
Syncope, 128
Synonyms of paresis, 22

Syphilis, 193
Syphilitic insanity, 174
origin, 72, 92, 96, 148, 166
Syphilization, reciprocal, 107

TABES dorsalis, 180, 259
in child of paretic, 191
relation to paresis, 259
Tache cerebrale, 137
Tabetic form, 91
Teeth, 56, 150
Temperament, 200
Temperature, 133, 164
Terminal symptoms, treatment of, 280
Termination, typical cases (Sankey), 243
(Savage), 244
(Christian), 225
(Clouston), 224, 226
(Middlemass), 225
(Phelps), 227
(Savage), 226
(Worcester), 227
(Vallon and Marie), 228
Testamentary capacity, 44
Tetanoid seizures, 129
Theories of paresis, 21
Thieving, a symptom, 30
Third stage (fourth period), 64
mental symptoms of, 64
physical symptoms of, 64
bed-sores, 65
change in speech, 65
exhaustion, 64
emaciation, 64
muscular incoördination, 65
reflexes, abolition of, 65
typical cases of (Campbell Clark), 72
(Clouston), 66
(Pick), 68
(Stearns), 66
(Sankey), 68, 70
(Savage), 69
Tomlinson, 132, 184, 209
Tonics, 274
Toxemia, chronic, 214, 263, 273
Toxic agents, 214
Traumatism of brain, 214
Travel as a remedy, 271
Treatment, prophylactic, 267
in hereditary predisposition, 267
Treatment, prophylactic in individual predisposition, 268
in threatened attack, 269
of established disease, 269
food, 272
hydrotherapy, 271, 277
massage, 271
rest cure, 271
travel, 271
medical, 273
antisyphilitic remedies, 275
sedatives, 275
tonics, 274
of special symptoms, 278
Tremor, 33, 45, 46, 56, 58, 65, 122
Trephining, 277
Trophic changes, 65, 149
Tuberculosis, 85, 241
Tuczek, 257, 263
Turner, J., 136
Twins, paresis in, 189, 201

UNILATERAL twitching, 136
Ulcerations, 150
Ulcer of foot, perforating, 66, 150
Ulnar nerve, analgesia of, 146
Urine, incontinence, retention of, 169
Urea, 170

VALLON, 162, 228
Varieties of paresis, 73
classifications of by (Baillarger), 75
by (Folsom), 73
by (Lewis, B.), 74
by (Meynert), 78
by (Mickle), 77
by (Sankey), 75
by (Spitzka), 73
by (Voison), 76
by (Shaw), 76
dementia, simple progressive, 94
typical case of, (Clouston), 94
(Stearns), 95
(Campbell Clark), 95
(Fisher, E. D.), 96
(Savage), 96
double form, 82
typical cases of (Blandford), 82

Varieties, double form typical cases of (Campbell Clark), 84
(Magnan), 83
(Savage), 83
galloping form, 80
typical cases of (Jelliffe), 81
(Savage), 80, 81
juvenile form, 97
typical cases of (Norman), 98
(Wiglesworth), 99
(Sankey), 100
(Raymond), 101
(Dunn, E. L.), 102
(Hoch, Aug.), 104
(Charcot), 105
(Middlemass), 106
melancholic form, 85
typical cases of (Blanford), 87
(Clouston), 86
(Savage), 87
(Spitzka), 87
(Stearns), 86
spinal general, paresis, 88
classification of, Bevan Lewis, 88
typical cases of (Campbell Clark), 91
(Clouston), 90
Varieties, spinal, typical cases of (Down), 91
(Joffroy), 93
(Savage), 89, 90, 92
(Stearns), 91
Vaso-motor disturbances, 33, 45, 85, 137, 271
Vertigo, 33, 122, 127, 132, 140
Viscera, pathology of, 260
Voison, 76, 164
Von Rad, 197

WALLERIAN law, 89, 217
White, 233
Whitcombe, 230, 232
White matter, pathology of, 249
Wiglesworth, 99, 100, 141, 214
Willis, 18, 19
Wilson, G. R., 186, 189, 190
Wolfenden, 170
Woman, paresis in, 106, 201, 206
typical case of (Savage), 107
(Folsom), 108, 109
(Middlemass, 108
Worcester, 228
Workman, 212, 219

ZACHER, 80
Ziehlen, 239

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